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WORLD AIR TRANSPORTATION

September 1961

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For New York Airways
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TURBINES: PEP PILLS FOR 'COPTER ECONOMICS

Page 16

For Chicago, Los Angeles Airways
. . . SIKORSKY S-61

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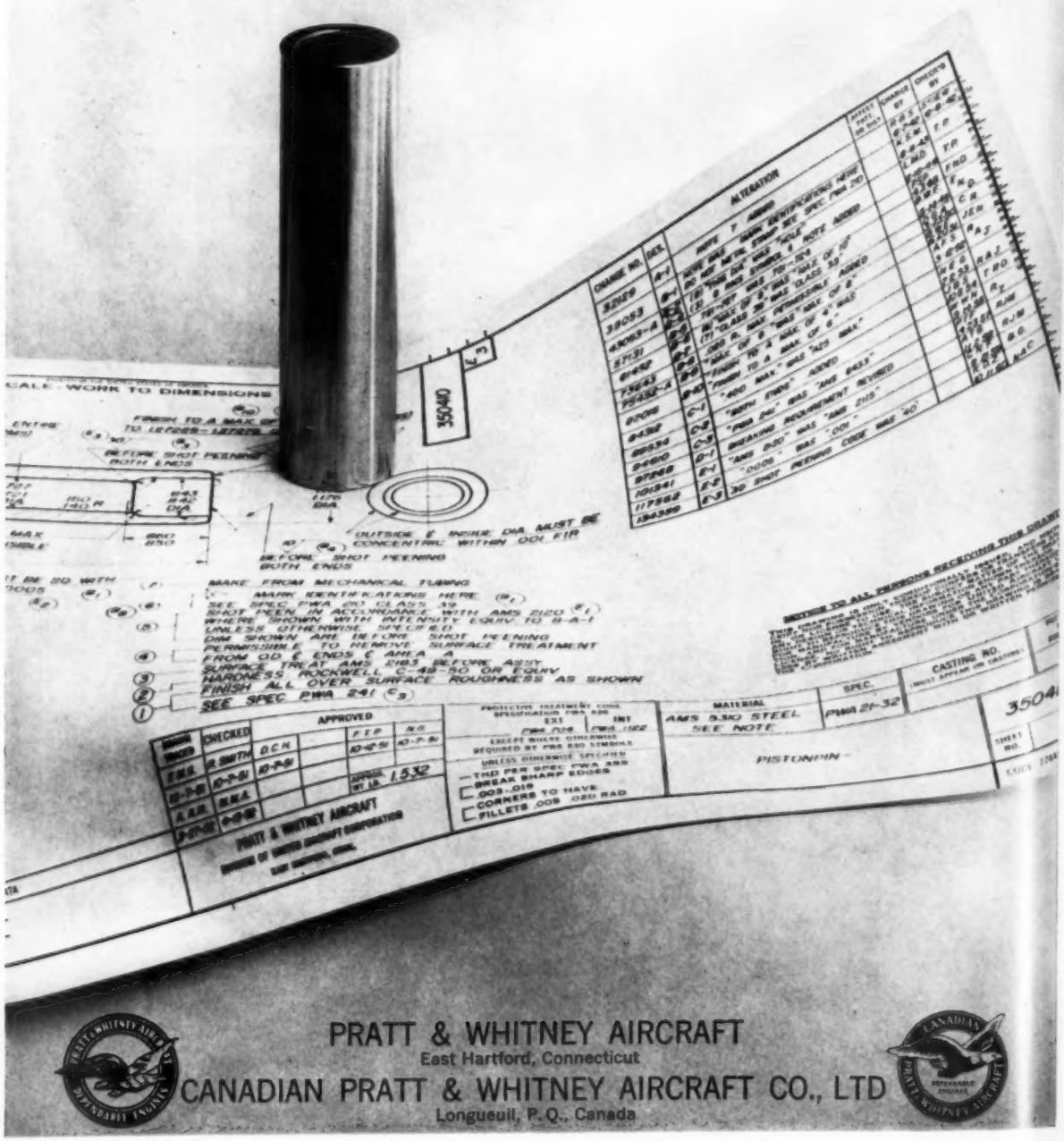

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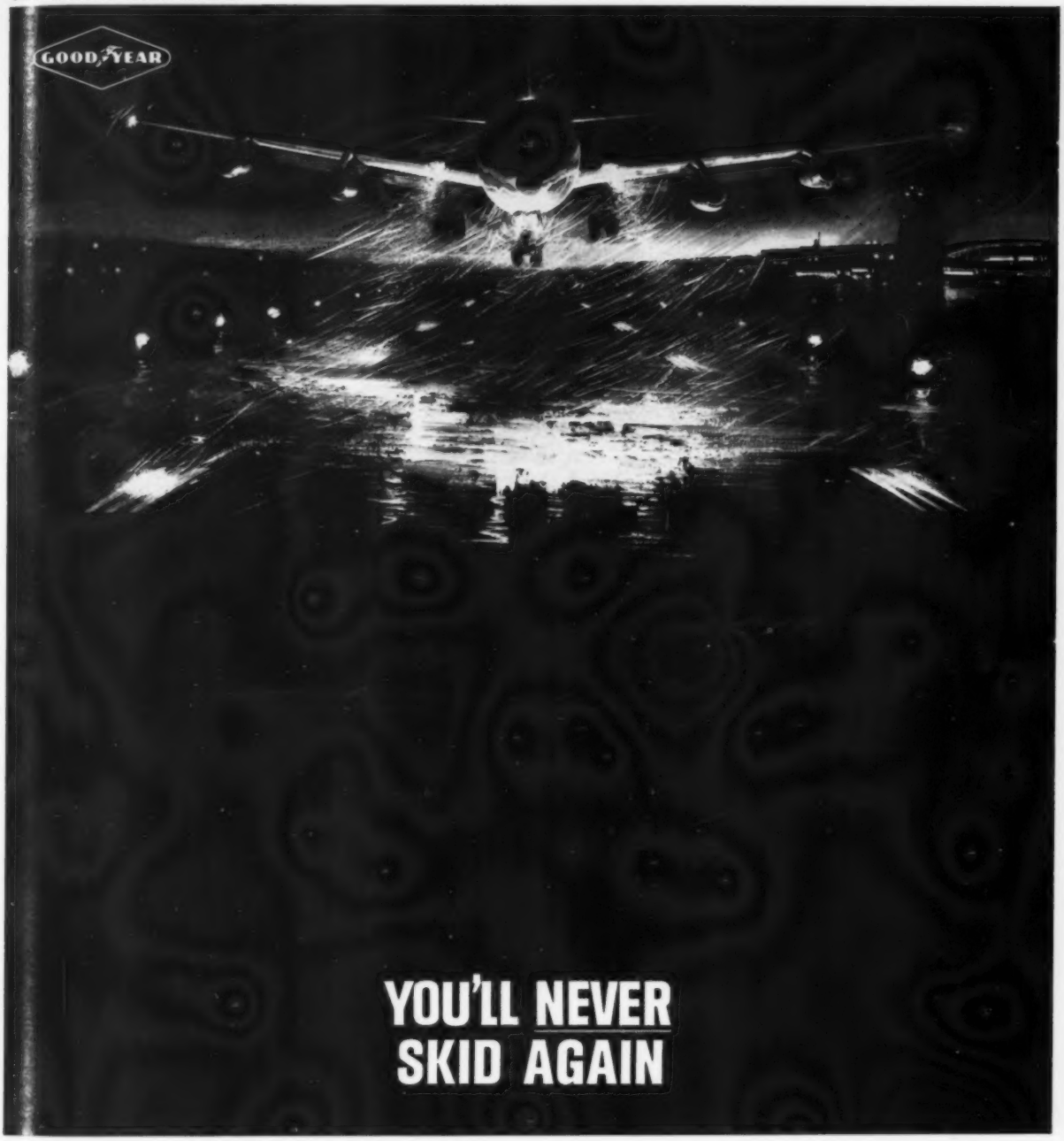

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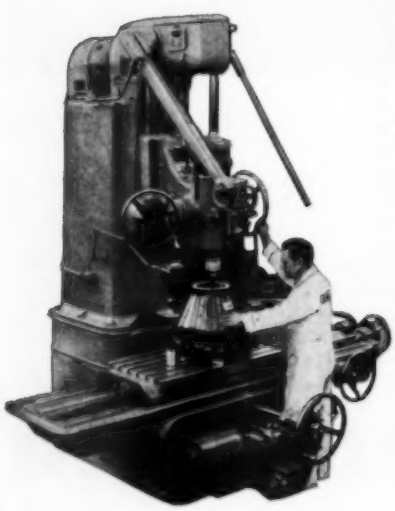

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airlift

WORLD AIR TRANSPORTATION

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THIS MONTH'S COVER—After years of waiting for the promise of better economics, the transport helicopter industry is about to get its wish in the form of two new turbines—the Boeing Vertol 107 and Sikorsky S-61. Both will enter service within the next month. For a complete report on what they mean to helicopter transportation, see page 18.

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Airways to Trouble

THE CAB's regulatory approach to air transportation seems to be filled with contradictions.

On the one hand it favors and encourages lower fares.

On the other hand it continues to hand down decisions which lead to cost factors which in turn lead to higher fares.

We refer to excessive competition.

In its valid determination to maintain competition over trunk routes, the CAB seems to lose sight of cost factors which determine profitability.

Divide the traffic on a given route between two carriers and there is a certain known cost factor involved. Divide this traffic among three carriers—and four—and the cost factor on which fares must be based undergoes a radical change which is more complex than simple arithmetical division.

There are certain fixed costs in operating an airline route whether the frequency be a single flight a day or twenty. Obviously it is not efficient to have to maintain a station with a small number of flights per day when the same station can handle ten times the number of flights with a relatively minor increase in costs.

There comes a time when competition leads to cost factors which in turn lead to increasing fares instead of lowering them. It is doubtful that CAB has really given much thought to the amount of competition that can be economically justified over a given route. It is not merely a matter of dividing existing traffic with the hope of over-all increases; it is also one of increasing the cost of handling each passenger for all by inability to spread fixed costs efficiently with higher flight frequencies.

What disturbs us is that the CAB seems to be leading the local carrier industry (or permitting the industry to proceed) into the same trap which has caused so much economic trouble in the trunk industry. At this stage of a subsidized industry ($65 million estimated for the current year) it seems to us to be patently senseless (and potentially ruinous) to throw the local carriers into direct competition with each other.

There should be enough lessons of the effects of excessive competition in the trunk industry for the CAB to move with utmost caution in spreading locals into each other's territories on a *directly competitive* basis. If the locals ever expect to get off subsidy they will never do so by diluting traffic and maintaining economically inefficient stations. The CAB surely knows this. Or does it? Or is it determined to keep the locals in bondage forever?

Locals or Regionals?

ISN'T IT TIME to give a new name to the local carriers?

The original term was feeder airlines when the CAB launched the local experiment after World War II. It was soon evident that these new and expanding carriers were not really feeders at all, so the name "local" was adopted.

But they aren't "local" any more. They are regional. All of them.

There used to be transcontinental trunks and regional trunks but there is no such animal as a regional trunk any more.

So why not discard the term "local carrier" and make it "regional carrier" which it really is in fact?

Mohawk, for one, has already discontinued the use of the word "local." And for good reason. It is most certainly a regional carrier.

Fare Grabbag

IN ITS NATURAL DESIRE to fill up empty seats during off-peak days and hours the airline industry seems hell-bent on creating a monstrosity of fare gimmicks. Has anyone counted the number of fares available on all carriers within the United States? There are weekend excursion bargains, all sorts of deals for teenagers, oldsters, night coaches, air shuttles, day coaches, weekday excursions, and so on. How about a fare for blonde blue-eyed people?

The ingenuity and sales efforts are fine, but isn't the public going to get mighty confused if it isn't already? And pity the poor reservations and ticketing agents unless somebody can pour all of these differentials into an electronic computer so all the agent has to do is to push a button to get the answer.

Costly Cause

THE AIR LINE PILOTS Association is taking steps to improve its image to the industry and public. It has even retained a public relations expert in what appears to be a serious effort to erase some very unfavorable opinions about the organization. ALPA once had a very strong following in Congress, for example, but in recent years its prestige declined considerably.

It seems to us that one progressive step could well be taken with regard to the 15-month-old strike at Southern Airways. There are some inflexible elements in unions who believe that no union can ever lose a strike, or afford to lose one, no matter what the circumstances may be. But for all *practical* purposes, ALPA lost the strike at Southern. The walkout was ill-advised and has never been popular with many of the rank and file of members. ALPA so far has lost every legal battle to try to make the strike effective. Meantime Southern not only is well back in business but is breaking records and has expanded its routes.

ALPA's efforts to harass Southern by starting its own airline—Superior Airlines—have not been

successful regardless of claims. The abortive airline, plus substantial strike benefits, are costing plenty. And the sight of pickets at various airports is not a pretty one. If by some eventual chance ALPA should be able to force the issue, there are many wounds that won't heal. From all angles it would seem to us that ALPA would improve its image and stature considerably by simply doing what everybody else has to do when a mistake is made or a game lost—admit it, find jobs for the men (some very good ones got caught in the strike fiasco) and start over.

EDITOR'S NOTE BOOK

IN ALL OF OUR 68 FLIGHTS across the Atlantic, we've always flown in four-engined equipment—until recently. And this one turned out to be the finest yet. We were lucky enough to be invited by Neil Burgess, commercial sales manager for General Electric's engine division at Evendale, to fly from New York to Paris late in May on the Sud Aviation Caravelle powered with two GE CJ-805-23C aft-fan engines. GE bought a Caravelle for experimental and demonstration work in its efforts to help sell these fine jets with American engines and wanted to show off the airplane at the biennial Paris air show.

That GE job is a performing animal with terrific take-off. The crossing, from wheels up at Gander to over the VOR station at Shannon with no tailwind, averaged 513 statute miles per hour and was as fast as Mach .78 and as high as 37,000 feet. Descent at one time was up to 4,000 feet a minute over Shannon. Crossing time: 3 hours and 52 minutes. Hardly time for a nap. Wonderful trip.

By the time we touched down at Le Bourget at Paris at 12 noon exactly on the opening press day of the show, to be met and toasted by the French, we hated to leave that airplane. It grows on you. The front compartment was amazingly quiet with music easily heard throughout take-off, level flight and landing. The rear was somewhat noisy because the engine installation is experimental and there was virtually no soundproofing installed. The GE engines are designed to go into the upcoming Caravelle VII with extended fuselage and there should be no noise problem whatever in a permanent model.

It's a pleasure to fly with test pilots. In this case it was Dick Scoles, chief test pilot for GE, and Swede Davis, no novice. On board were GE people, including Ray Small, manager of field sales; Bob Westerheid, manager of test flight; Don Bergeson, project manager for the Caravelle; Peter Kappus, manager of product planning (and quite a genius himself); Jean Gelos, Sud Aviation sales manager for U.S.; Ray Venning, Douglas Aircraft sales, and some engineers. But we should not forget Bob Smith, of GE public relations, whose old friend Rocky in Halifax kept us healthier than we intended to be during an unscheduled overnight stop there (weather), and Hal Metzger, city editor of the Cincinnati Enquirer, who was the only outsider besides ourselves on board.

Strange Customs

ALL IT TAKES is one cockeyed customs bloke to destroy a fortune spent in advertising and sales efforts to build up resort travel.

Two former airline men have been active in running the Development Board of the Bahamas to promote travel to Nassau and all of the Bahamas—Vic Chenea, many years the top sales manager for Pan American and a long-time air pioneer, and H. Kurtz Henley, formerly and for a long time with Eastern Air Lines, who has just recently left the Board to join United Tours.

So Chenea and Henley were more than slightly interested in the decision of the southeast chapter of the American Society of Travel Agents to hold its regular spring meeting at the Grand Bahama Club, served by West End Airport about 55 miles off shore from West Palm Beach. (And it's quite a fine resort, incidentally, if they'd just tone down that goshawful high-volume music in the bar.)

Our better half, in her capacity as director of the U.S. passport service, and ourselves, were invited to make a dual appearance on the program. Se we hopped on Mackey Airlines and landed on foreign soil, since the U.S. still respects those historic accidents of sovereignty and geography. We had a portable typewriter along since we were on an extended working trip and it never occurred to us to declare it since it was our personal property for use in doing some typing.

So there was a customs bloke, a native of Nassau, who began opening everybody's luggage even though we were all going to a travel agent's meeting to develop more resort business for the Bahamas. One woman with three children and 11 pieces of luggage had to open every piece. When this bloke came to us he wanted to know what that was. We told him a typewriter. He said we hadn't declared it. We said no, why should we. He said we'd have to put down a $10 deposit on it. We said that was ridiculous.

By the time we went through the humidity and rising temperatures inside and outside, the deposit price had gone up to $20. We allowed as how this was one wonderful way to welcome Americans on which the Bahamas exist almost entirely, and we guess we were lucky the deposit didn't bound upwards again. The entire customs procedure for ASTA members took a very long time—tedious and unnecessary.

By the time we got to the hotel, word of our deposit had gone the rounds. Vic Chenea insisted on giving us $20 in case we didn't get our deposit back. We did get it back on departure, and returned the twenty to Chenea, but the whole episode is an example of arbitrary petty bureaucrats enforcing the letter of the law at an island 55 miles off the U.S. coast and a long way, by round-about means, to a place like Nassau where such things as typewriters just might possibly be sold. And if they were sold, so what? The Nassau-Bahamas Development Board was duly embarrassed.

Frankly, it was our second trip to the Bahamas and may be our last. The first time, some 15 years ago, we had to leave the hotel restaurant because we were alone and couldn't get service. The second time—well, the Bahamas are lovely, but until the red tape nonsense is eliminated, count us out. But all you other folks don't carry typewriters, so go there and have a good time—the Bahamas have excellent resorts.

Jet Shooting Party

IT REQUIRES very little imagination to point up the seriousness of the hi-jacked Continental 707 at El Paso last month, but we do wonder at the seemingly senseless action of the law enforcement officers in shooting up all of the tires of the 707 and of one engine. A truck parked in front of the plane was sufficient to keep it from taking off. Or maybe shooting up one set of tires. But the boys acted like a bunch of firemen wrecking a whole house to put out a small fire. They've seen too many TV westerns.

Wayne W. Parrish

London Airport

To the Editor:

I read with great interest your comments in the Editor's Note Book (*AIRLIFT*, August), about passenger handling at London (Heathrow) Airport, in which you quote Roger Bacon's comments from the British magazine *Flight*.

I am entirely in favour of two such influential aviation magazines focusing the spotlight of their criticism on a subject which is so important to the airline industry generally, and to London Airport in particular. As both cases deal with incidents concerning BEA, perhaps you will allow me to put the airline's point of view.

We do not like having to apply a close-out time for passengers and I agree that 30 minutes is too long in relation to a short journey between London and Paris. Unfortunately, we have really very little choice in the matter as things are at Heathrow Airport at present, if we are to have any hope of getting the aeroplane away on time.

Over a number of years BEA has consistently opposed the use of airside coaches as a method of boarding passengers. We are still pressing hard for a finger and gate system at Heathrow, which would enable the passengers to walk on board the aircraft in a constant flow.

We want a properly sign-posted, functionally designed terminal, which would enable the passengers to find their own way without having to be escorted like a bunch of school kids. We are now trying hard to get permission to build our own terminal so that we can turn all these ideas—both the well proven ones and a number of new ones—into practical reality. We can then demonstrate that given the right facilities, there is no mystery about passenger handling which courtesy and normal common-sense organisation cannot solve.

One difference will, however, remain in drawing a comparison between a Washington-New York service and London-Paris Customs and passport formalities. But even these are not insuperable obstacles to achieving a much needed improvement in the passenger handling situation at Heathrow Airport.

In one particular—relating to your own experience—we were clearly at fault. As you will recall, you went to the check-in counter to pick up your air ticket and you were asked to go to the "ticket on departure desk," with the result that you returned to check-in after the close-out time. As a result of your comment, we have re-organised the check-in on the basis of separate counters for ticketed and unticketed passengers, so that the ticket issue and check-in can now be done at the same point.

Thank you for giving us an effective kick in the pants and thereby causing us to improve our service in this respect.

E. P. WHITFIELD,
Traffic Director
British European Airways
Bealine House, Ruislip, Middlesex
London, England

To the Editor:

For the second time this year you have "blasted" London Central Airport. As an ex-BEA and now AA employe I agree that passenger handling and loading could be somewhat improved. However, as a world-wide traveler, when will you recognize the fact that Europe is a collection of separate countries, each with their own Immigration and Customs regulations and procedures?

There is absolutely no comparison between London-Paris and New York-Washington, other than distance. Heaven help the passenger arriving at Idlewild awaiting "clearance" into the U.S.A., if Washington and New York were also located in separate countries.

In that case, I'd be more than happy to accept your comparisons of total time involved. From what I've seen of current Immigration and Customs clearing conditions at Idlewild, journeys of comparable distance using European terminals and clearance facilities would win hands down.

MICHAEL F. SWIFT
Columbus, Ohio

Editor's note: *There is no outgoing baggage inspection at either London or Paris and immigration clearance is rapid. Our main objection is the 30-minute advance closing out of each flight, plus the tedious boarding procedure usually quite distant from the terminal. By far the least troublesome feature of European travel is customs and immigration. The trouble spots are with airlines and airports—and quite easily curable.*

More Africa Comments

To the Editor:

Bravo! It's high time that thinking editors, like yourself, speak out on subjects that need to be spoken to. Too many times all of us let some soft headed pinko do our thinking for us or at least we let them speak for us.

I am referring to the article you wrote in the July issue of your fine magazine entitled "En Route" concerning the race issue in South Africa. I agree with your views and sincerely wish that you would write more of the same.

WARREN C. WILKERSON
5105 Franklin Road
Nashville 4, Tenn.

To the Editor:

Your article "En Route" in the July issue of *AIRLIFT* is one of the most informative articles on South Africa it has ever been my pleasure to read. Congratulations on a job well done.

It is hoped you will continue to travel and give your reading public the benefit of your observations.

CARL F. REUPSCH
Business Mgr.
Port of San Diego
San Diego, Calif.

Airport Congestion

To the Editor:

I read *AIRLIFT* cover to cover and I congratulate you on a lively, interesting publication. I especially am taken with your editorial comments.

As one who flys constantly in this country and Canada (as well as overseas) I am becoming increasingly irritable about the absence of discipline and the lax methods of handling visitors. As an example—within the last several months I have come into the Los Angeles airport five times from New York, San Francisco and once from Chicago. Three different airlines were involved. In each case I almost had to fight my way from the apron into the airport corridor because visitors crowded out on the airport proper to welcome their friends. This is becoming an increasingly serious problem for incoming passengers at many airports and I think the airlines

Continued on page 11

Leigh Fisher Joins AAP Staff

Airport authority Leigh Fisher

Leigh Fisher, authority on airport management and finance, joins the staff of American Aviation Publications this month as editorial director-airports, in addition to continuing his airport consulting and private aviation investment interests.

Fisher organized the airport consulting firm of Leigh Fisher & Associates (now Leigh Fisher Associates Inc.) in 1946, and has done work on more than 200 civil airports throughout the world.

Six months ago, he announced that he was turning over the company's management to A. W. Compton and relieving himself of responsibility for its internal administration. Fisher continues to serve as consultant through his company on special airport projects, but will devote much of his time to writing, lecturing, and advising private investors in aviation projects, particularly in real estate and general aviation airport ventures.

Fisher will contribute material to *AIRLIFT, SKYWAYS, AIR CARGO* and other AAP publications. In the October issue of *AIRLIFT*, he will cover airport public communications—public address, flight announcements, signs, telephones, etc.

His company has served some 140 public clients in planning, financial and management appraisals covering over 200 civil airports ranging from Stockholm, Sweden, to Wellington, New Zealand, and including many large U.S. fields. Among "firsts" claimed by the Fisher organization are: the first uniform airport cost accounting system, the "forced feed" terminal design, wall display cases, and the "cargo city" concept. Recently Fisher has been an advocate of the organized airport industrial district concept.

He continues to make his home in the San Francisco Bay area.

A look at what's ahead in the realities of space exploration

Some predictions from Douglas —builders of Thor which has launched 80% of all successful U.S. satellites & space probes in the past two years

Our mastery of space has advanced so rapidly that only diehard pessimists doubt the moon and planets will know our footsteps within a few decades.

Already a vehicle capable of orbiting a 19,000-pound payload, or driving 5,000 pounds to escape velocity, or lofting 2,500 pounds to Mars or Venus is being built in the U.S. This is Saturn, taller than a 14-story building, with an initial thrust of 1.5 million pounds. Its second stage, under construction for NASA by Douglas, will use a cluster of liquid hydrogen-oxygen engines of unique design.

The world knows a man can rocket into space and return. Can he survive for long periods? Douglas studies give a strong affirmative. Zero gravity and artificial G require further study. Radiation is a continuing problem, but reports from Discoverer XVII, one of 46 space projects launched by the Douglas Thor rocket, show the threat less serious than was first thought.

The cost of space travel? A breakthrough in nuclear power, which Douglas engineers confidently predict, should cut the operational cost of a trip to the moon to about $900 per passenger. Other power sources, already under study, may even open such stars as Sirius and Alpha Centauri to travel.

The DC-8 Jetliner, an example of Douglas aero-space leadership

Few of us will ever be lunar commuters, but growing millions are learning about a new kind of travel through the DC-8 jet.

Here is an airplane that slices through time at 10 miles a minute, opens the world to all who have an urge to get up and go places.

Next trip, fly a DC-8 jet, newest of which is the DC-8 Series 50, fastest long-range jetliner in the sky.

Douglas is building Saturn's 2nd stage.

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Continued from page 9

could do a better job of control if their employes would exercise more restraint.

European airports and Canada too do a much better job, in my opinion, in keeping visitors inside the airport building. As you know, in Toronto and Montreal a guard will not permit greeters outside.

Also, I think the time has come to regulate the persons who are just looking around. Sightseers should have a place to go but they shouldn't clutter up the passenger check-in areas with kids running around the counters.

I am not an irritable old man—just a guy who thinks that at the end of a trip, long or short, he should be able to walk comfortably out of the airport.

Again, congratulations on a fine magazine and perhaps you might find a place in your editorial columns to ASK airport authorities and airlines to be thoughtful about the problem.

E. C. McDONALD
Sr. Vice President
Metropolitan Life Insurance Co.
New York 10, N. Y.

Simulator Problems

To the Editor:

This is written in response to your comment in "Technically Speaking" in the February, 1961 issue concerning the FAA threat to flight simulation. I have been very close to the flight simulator problem as Flight Simulator Superintendent for an airline for three years until last winter.

The FAA is not the basic threat to flight simulators. The agency is making a strenuous effort to force simulator manufacturers and operators to utilize these machines in a safe and worthwhile manner.

I really dislike being in the position of defending the FAA, but having spent eight months at a simulator plant in an effort to accept manufacturer's B-707 and DC-8 simulators during 1959, I am well aware of the real difficulty with simulators. That difficulty is, first, lack of understanding on the part of the airline users of the real value of the machines; and, second, a downgrading of simulation accuracy for, as it may better be called, fidelity by the simulator manufacturers.

This fidelity downgrading is the result of economic pressure from the airlines to reduce price. Moreover, quality has been reduced as well as fidelity. Our major problem with the 707 and DC-8 simulators was the very poor quality control on the part of the manufacturer.

The entire eight months was spent in an effort to get the machine to function, rather than in checking it out for proper function. The design was excellent and, when functioning properly, simulation was excellent and the training obtained was highly satisfactory. However, because of poor quality control on the part of the manufacturer and the conviction on the part of the airline operator that the machine could do no better, there has been continuous pressure instigated by the manufacturers and abetted by airlines to downgrade simulator requirements to the level approximating that of a link trainer.

I believe very firmly that a properly maintained simulator will do an excellent job of flight training. I have not yet encountered a simulator that was doing the job it was designed to do because of poor maintenance in general and because of inadequate knowledge of airline people.

The FAA later bought their simulator from the same source and I had the opportunity of observing their difficulties in attempting to get their simulator into operation. I don't know whether they have a fully operating machine yet.

The pilot uses a simulator to develop cockpit habits and procedural habits that will "wily nily" be carried into the airplane. If he is forced to develop simulator accommodations to compensate for machine quirks, the simulator accommodation may be a dangerous addition to his training.

This has been a fairly forthright note; it represents only my personal position at this time because I no longer work for the airline. My hope is that the FAA and the airline operators and the manufacturers, by some program of learning, will enable simulators to be properly designed, maintained and operated in order to realize the tremendous safety and economic advantages of these machines.

R. G. MACKENZIE
Sunnyvale, California

ICAO Clarification

To the Editor:

I am writing to you with respect to our interview which was published in the June issue of *AIRLIFT*.

It has been brought to my attention that the first two answers on the right column on page 27 might give the reader the impression that the Training Centres are financed exclusively by ICAO. Of course, this is not the case, and the two answers in question should be read together with the last paragraph of the left column on the same page. I would like to add that for each of the Centres the government contribution is higher than the one from ICAO, the percentage varying in each case; for instance, the Mexican Government contribution is about 75% of the total.

I should be grateful if you would find it possible to clarify this question in some future issue of *AIRLIFT*.

WALTER BINAGHI
President of the Council, ICAO
Montreal, Canada

COMING

September

Sept. 4-10—Society of British Aircraft Constructors, annual equipment exhibit, Farnborough, England.
Sept. 6—ATA, reservations procedures subcommittee, ATC conference room, Wash., D. C.
Sept. 6-8—Second Annual Cargo Handling Exposition, New York, Pier Nine.
Sept. 12-14—National Assn. of State Aviation Officials, annual convention, Miami Beach.
Sept. 12-15—ATA, joint airline-government inspection agency, facilitation meeting, San Francisco and Los Angeles.
Sept. 13-14—Airwork International Operations & Maintenance Symposium, Milville, New Jersey.
Sept. 14-15—ASME, joint engineering management conference, Hotel Roosevelt, New York.
Sept. 27-28—ATA, subcommittees on ground equipment and maintenance facilities, Marriott Key Bridge Motor Hotel, Wash., D. C.
Sept. 29-30—Society of Experimental Test Pilots, symposium on supersonic transports, Beverly Hills, Calif.

October

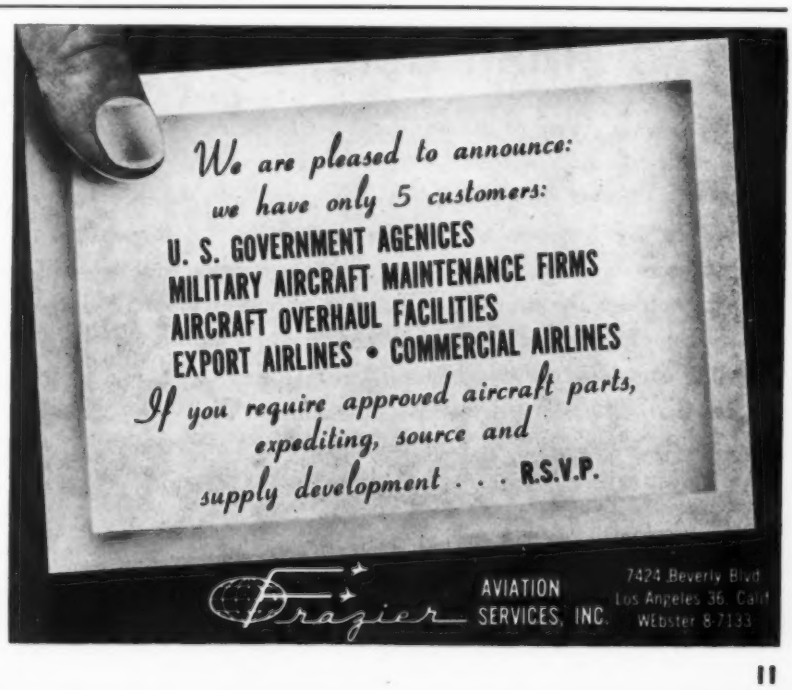
Oct. 2-4—IRE, Canadian electronics conference, Automotive Bldg., Toronto.
Oct. 3-5—1961 National Airports Conference, University of Oklahoma, Norman, Okla.
Oct. 8-10—International Northwest Aviation Council, 25th annual convention, Spokane.
Oct. 9-11—IRE, national electronics conference, Int'l Amphitheatre, Chicago.
Oct. 9-11—Airport Operators Council, mid-year conference, Hilton Hotel, El Paso, Texas.
Oct. 23-25—East Coast Conference on Aerospace & Navigational Electronics, Lord Baltimore Hotel, Baltimore.
Oct. 23-27—IATA, 17th annual general meeting, Sydney, Australia.
Oct. 24-26—ATA, engineering & maintenance conference, Miami Beach.

November

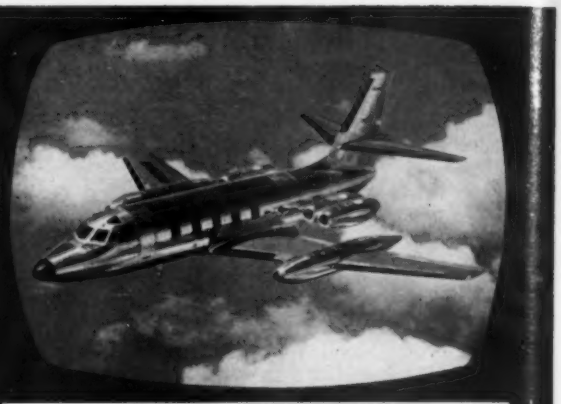
Nov. 1-3—Connecticut General Life Insurance Co., symposium on the issues and challenges of air transportation, Hartford, Conn.
Nov. 6-17—Annual Institute on Air Transport Management, the American University, Wash., D. C.
Nov. 26-Dec. 1—American Society of Mechanical Engineers, annual winter meeting, Statler Hilton Hotel, New York.

December

Dec. 5-6—(Tentative) FAA, supersonic transport airworthiness conference, Wash., D. C.
Dec. 5-7—NATC, annual meeting & NATA convention, Statler Hotel, Wash., D. C.

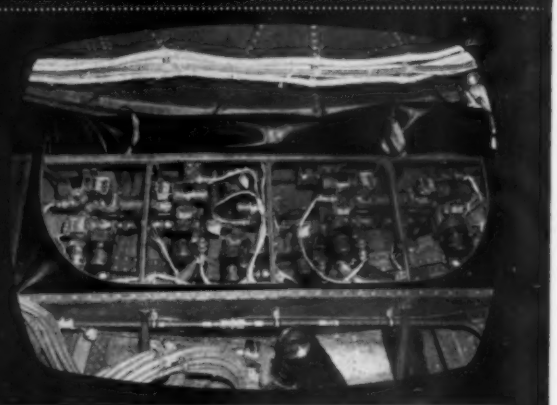


BFG disk brakes and wheels provide fast, smooth stops



BFG De-Icing system protects wing and tail

BFG fabric tread tires run cooler, last longer



BFG fume panel with pressure sealing zipper gives easy access

B.F.Goodrich helps make the JetStar a small-field, all-weather performer

All-weather capability of the new Lockheed JetStar gets an assist from proven BFG pneumatic De-Icers, which equip the leading edges of wing and tail surfaces. The BFG system was chosen for its light weight and simplicity. An electronic timer activates the solenoid in the distributor valve which then pulsates the De-Icer with turbine bleed air.

Ability of the JetStar to operate from small fields, of less than 5000 feet, demands dependability on the runway. Here BFG disk brakes and wheels, of the same type used on big passenger airliners, provide fast, chatter-free stops. A thermally balanced brake design assures constant high torque throughout the life of the lining. And many of the JetStars will roll on BFG fabric-tread jet tires.

BFG-engineered products contribute to the dependability of every U. S. commercial aircraft operating today. For complete information check with *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. AL-9, Akron, Ohio.*

B.F.Goodrich **aviation products**

AIR TRANSPORT TRENDS

Equipment **Shift in aircraft buying will be to small/medium jet.** Requirements for big models are tapering off. Braniff is interested in a small jet. Now Eastern says it sees need for 40, is preparing specifications. U.S. manufacturers haven't committed themselves yet on building a smaller plane. British Aircraft Corp. is making determined bid in U.S. to nail down orders for BAC-111 among trunks, regionals and locals. One item being stressed in operating cost is significance of landing fees. Difference of 70,000 lbs. (between BAC-111 and nearest competitor) is equivalent in landing costs to carrying five passengers 200 miles, BAC says.

Stores **Airlines' worldwide pooling of jet spares is working extremely well.** It seems likely that pooling will eventually be extended to include exchange of maintenance work away from base.

Business **European airlines have plenty of problems.** A lot of them stem from disappointing Atlantic traffic. There's concern about filling seats that will be available this winter. BOAC and BEA are also worried about "invasion" of independents. SAS and KLM have financial problems, are concerned that U.S. will restrict their Atlantic operations. Swissair was particularly sensitive to traffic drop on U.S. route, has also been hurt by Convair 990 delay. Late ordering of jets hurt Iberia. Sabena is not doing too well on new Mexico route (Congo business has picked up). Air France, Alitalia and Lufthansa feel effects of capacity increases in Far East and South America.

ATC **Watch for FAA to extend Operation Pathfinder.** The traffic control experiment in the midwest has been so successful that the agency now has top-priority program to expand positive control above 24,000 ft. over much of U.S. within the next 18 months.

Traffic **U.S. traffic is soft.** Trunk passenger-miles in first seven months were 1.7% below same 1960 period. For airlines to equal 1960 total traffic this year, last five months must show 2.3% increase. And for 1961 to register the modest 4% gain that was forecast earlier, last five months must be up an improbable 12%.

Electra load factors continue to gain. During recent two-week period, American's load factor on the Lockheed turboprop was the highest for its fleet, topping the jets.

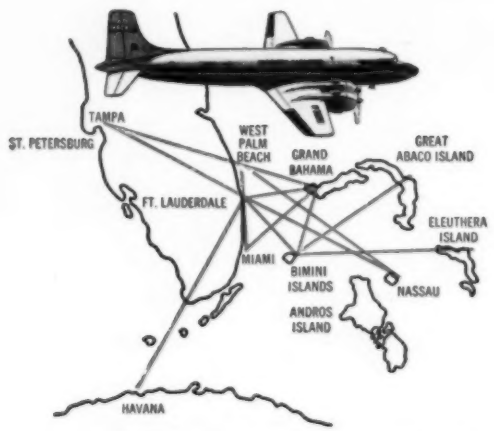
Taxes **Jet fuel tax this year is improbable.** Treasury Dept. and industry have been unable to agree on a formula. Also, Treasury has told House Ways and Means Committee that it wants to study need for increased fuel taxes throughout transportation industry before making overall recommendations to Congress.

Fares **World's lowest air fare is claimed by British European Airways.** Starting Nov. 1, company's London-Glasgow-Edinburgh night service will cost $8.82 one-way, or 2.33¢ per mile.

Former barnstormers dedicated to modern aviation—Col. Joseph C. Mackey, President, and (right) Leonard J. Povey, V.P. and Mgr., Aviation Services.

MACKEY...South Florida Haven for Executive Aircraft

Mackey's new general aviation service ramp, north end of Broward County International Airport, Ft. Lauderdale. Other facilities (office, lounges, weather and briefing room, etc.) are behind service hangar.



The sunshine routes of Mackey Airlines. A perfect safety record, courteous service, comfortable seats, and reasonable fares. For full enjoyment of tropical and island scenery, all flights are scheduled during daylight hours.

For "turn-around," "port-of-embarkation," or transient service in South Florida...try Mackey at Ft. Lauderdale. You'll have the unique experience of being looked after by the skilled personnel of a scheduled international air carrier . . . as well as enjoying some of the finest fixed-base facilities in the country. Especially tailored for executive and business flying, the new Mackey facilities feature an owners lounge, executive conference room, pilots lounge, briefing room equipped with weather teletype and direct line to FAA flight service, airport shuttle service, palm-shaded swimming pool, and a coffee pot that's always on. And if you're bound for foreign places, you'll find Mackey a big help with the nearby customs, overseas clearances, routes, etc.

On the ramp, too, everything is first class—24-hour service, modern refueling trucks, ADI cart—and dependable Phillips *66* Aviation Gasoline (80, 100, and 115 octane) and Turbine Fuel. Routine maintenance by A&P's or IA's is available right at the ramp . . . major jobs at the airline maintenance hangar nearby. Mackey also provides multi-engine charter by ATR pilots . . . and, of course, scheduled airline flights in Florida and to the Bahamas.

The lady passengers especially will enjoy the air-conditioned and comfortably appointed owners lounge . . . secluded from the noise and activity of the service ramp.

A cool and relaxing dip while your aircraft is being serviced. In a setting of tropical greenery, this pool is for the exclusive use of Mackey customers and their guests.

Mackey's executive conference room is available to all its customers—an exclusive facility that executive and business fliers should find especially convenient.

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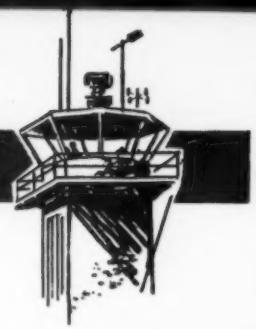
INDUSTRY AT A GLANCE



PEOPLE

Major changes—At TWA, Floyd D. Hall takes over from E. O. "Oz" Cocke as senior v.p. and system general manager. Hall, formerly v.p. and general transportation manager in Kansas City, also becomes an executive committee member.

Cocke becomes senior v.p.-industry affairs, handling public and community relations, ATA and IATA matters, and relations with other airlines. He is also counselor to the president.

MANAGEMENT

Airline deals—In Brazil, Varig, headed by aggressive Ruben Berta, bought REAL for an undisclosed price, subject to government approval.

Move follows purchase last May by Varig of 50% of Aerovias Brasilia, the international division of REAL. Included in the deal are three Convair 990s, scheduled for delivery to REAL in December, which will be used by Varig on REAL routes to Miami and Tokyo.

In Lebanon, Middle East Airlines, aided by Lebanese banking and commercial interests, is buying back the 48.4% interest in the line held by BOAC. Negotiations were initiated by MEA.

TWA sues Hughes—Howard Hughes, who for years called the shots at TWA through his 78% stock interest, finds himself hit by a $115 million suit in which the airline alleges that he continually violated antitrust laws.

Other defendants: Hughes Tool Co. and Raymond M. Holliday, Hughes' representative among the three trustees of Hughes' TWA stock.

TWA wants Hughes "perpetually enjoined" from trying to control the company and from acquiring or holding any interest.

Among many charges: Hughes tried to force TWA to accept 13 Convair 990s which are "not as suitable to TWA's needs" as Boeing 707s. He also pushed merger with Northeast on terms "not advantageous" to TWA.

After the voting trust was set up and directors ordered 26 Boeing 707s, TWA alleges that Hughes warned Boeing that the contract was not binding, and told insurance companies and banks that the voting trust was invalid and that financing given the airline would be invalid.

ROUTES

Big route cases—U.S. international air routes on two fronts are up for CAB action. Major changes will result.

CAB is (1) investigating U.S.-South American service, is expected to cut from four to two the U.S. carriers in the area, (2) reopening the international part of the transpacific route case.

In South America, CAB tentatively favors an east coast route, probably operated by Pan American, and a west coast route (with extension to Miami and New York), flown by either Braniff or Panagra. Delta would be terminated at Caracas and Maracaibo.

New pattern, CAB thinks, will end duplicating competition and establish a balance between routes. Speculation is that a Braniff-Panagra merger may result, with Braniff surviving. A federal judge has ordered PAA to show cause why it should not sell its 50% Panagra interest. However, W. R. Grace, also 50% owner, says it won't dispose of its interest. A change in Grace's status would be necessary before merger would be possible.

CAB previously recommended new Pacific routes for PAA and Northwest, but President Eisenhower threw out the case just before leaving office, on grounds that foreign relations would be impaired if second U.S. carriers were added to Orient routes. Hearing will focus on traffic potential vs. capacity.

CAB didn't reopen the U.S.-Hawaii part of the case (also stayed) which granted a route to Western. It extended TWA to Hong Kong and South Pacific from Society Islands to Fiji, and will take a new look at need for U.S.-Tahiti single-plane service.

MISCELLANY

Air piracy ado—As though empty seats and financial losses weren't sufficient problems for U.S. airline managements to cope with, a rash of hijackings of airline aircraft raised fears in the industry of new federal action to attempt to bar the cockpit door against plane rustlers.

Congress promptly originated and swiftly passed legislation stiffening the fines and imposing optional death penalties for airborne crimes. FAA began discussions with airlines on prospects of strengthening cockpit doors. Airlines took a dim view of this approach as a possible future detriment to safety should a crew become incapacitated. Pilots similarly opposed a suggestion that they be armed.

But the biggest relief to an increasingly tense situation came from Cuba's Fidel Castro. The immediate return of a Pan American DC-8 and agreement to send back Eastern's Electra after holding it 24 days in Havana removed the lure for other would-be hijackers.

"ITT DME ...THE NAVIGATION SYSTEM OF THE FUTURE MAKES AMERICAN AIRLINES' JETS MORE RELIABLE NOW!"

Walter Braznell
Ass't V. P. Flight
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"...it provides the missing link for the ultimate in precision air navigation," says Captain Braznell.

"...that is why ITT—DME (Distance Measuring Equipment) has been installed in the entire American Airlines jet fleet.

In the early stages of our jet planning, we recognized the urgent need for the rapid and precise fixing of an aircraft's position in space. The old system of dead reckoning between navigation facilities or radial cross checks was too wasteful of airspace.

ITT came up with the answer in short order – DME.

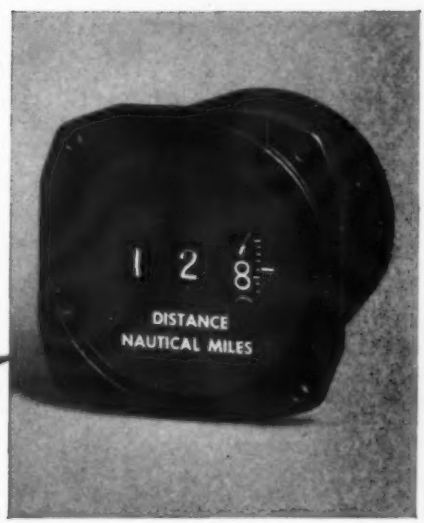
Without precise position-fixing air traffic must be controlled by airspace-wasting "time" separations.

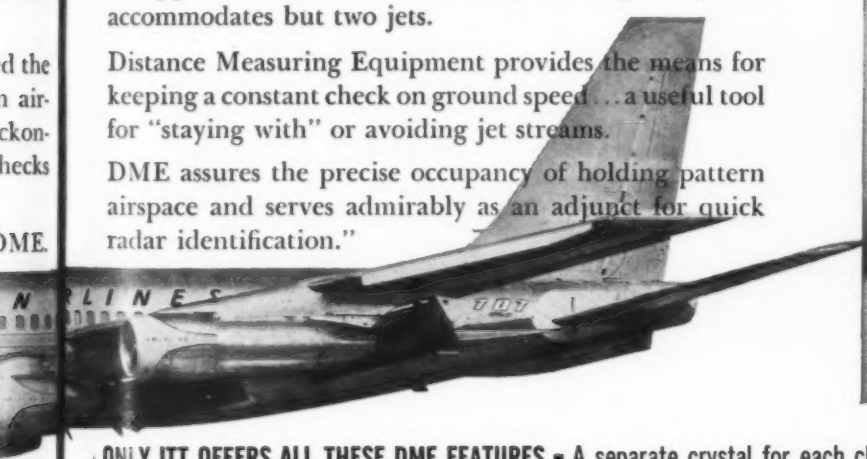
Our DME dramatically improves utilization of airspace. For instance, a single flight level of a flight segment as short as Chicago-Detroit can accommodate ten jets equipped with DME where today this flight segment accommodates but two jets.

Distance Measuring Equipment provides the means for keeping a constant check on ground speed . . . a useful tool for "staying with" or avoiding jet streams.

DME assures the precise occupancy of holding pattern airspace and serves admirably as an adjunct for quick radar identification."

ITT's airborne DME, weighing only 34 pounds, gives the pilot continuous distance information, accurate to 350 yards at all ranges up to 200 miles on any of more than 250 Vortac and 300 Tacan beacons.





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The exclusive features of ITT-DME alone merit its prime consideration by all airlines. The fact that ITT-DME has been proven in flight by American Airlines, America's leading airline, is another powerful reason to investigate this precision instrument now. For full information on ITT-DME, write, wire or phone "Marketing Dept.", ITT Federal Laboratories, 500 Washington Ave., Nutley, N. J.

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Turbines Bolster 'Copter Economics

New Vertol 107 and Sikorsky S-61 promise relief for operators as Congress slaps a lid on future federal subsidy

By JOSEPH S. MURPHY

THE DC-3 OF HELICOPTER TRANSPORTATION is about to enter service. In fact, two of them—the Vertol 107 and the Sikorsky S-61.

After eight years of battling the headaches of noise, vibration and high maintenance costs, helicopter operators are about to receive the biggest relief in their history, in all three areas.

Who will be first with what helicopter remains a toss-up at this writing: probably Los Angeles Airways with the S-61, but at best only by days or a week before New York Airways with the 107. About January 1, Chicago Helicopter Airways will get its S-61s.

Some say the turbines will do even more for helicopters than the DC-3 for fixed-wing airlines. In a recent study for Sikorsky, consultant Colin McIntosh pegged the DC-3 of 1935 as a 27% improvement over the Lockheed 10A, whereas the S-61 will cut costs of the present S-58 by 51%.

Estimates at Vertol run in a similar vein. The tandem rotor 107 will slice seat costs by 56.5% of New York Airways' Vertol 44s at a 10-mile stage distance, 58.1% over 20 miles and 59% for a 30-mile segment.

With about double the capacity and anywhere from a 28 to 65% improvement in speed, the new turbines will boost productivity sharply. Present piston 12-passenger models have been severely limited in handling peak demands. With higher speeds, New York Airways, for example, expects to improve schedule frequency from once every 50 minutes to every 25 minutes.

Flight times such as Idlewild-Newark in 13 minutes, only seven minutes to Wall St. and six to LaGuardia should prove a marked improvement over present schedules. In a recent demonstration, the 107 prototype flew from downtown Philadelphia to downtown New York in 32 minutes, a good hour better than any competitive form of transportation.

Los Angeles Airways' president Clarence Belinn says the S-61 should make it possible for his airline to increase passenger loads 1000% the first year and 2000% the second year. With five S-61s in service, LAA could carry up to one million passengers a year.

But these promises are turning into reality none too soon for helicopter operators. The patience of Congress is wearing thin over the increasing need for subsidy. Last year it balked. This year it sliced $900,000, or 13%, from a $6.9 million request.

VERTOL'S 107 will appear on New York Airways routes starting sometime in October.

SIKORSKY'S S-61L goes to Los Angeles Airways first, then to Chicago Helicopter Airways about January 1.

Profile of Two Turbines

	Tandem rotor Vertol 107	Single rotor Sikorsky S-61L
Gross weight	18,450 lbs.	18,700 lbs.
Fuselage length	44' 7"	58' 11"
Rotor diameter	50'	62'
Cruising speed	150 mph	136 mph
Passenger capacity	25	25-28
Range	More than 200 mi. with reserves	350 mi. maximum
Engines	(2) General Electric CT-58s at 1250 shp	same

Wrong time for economy

As a result, the three airlines will have to tighten their belts at a time when they are trying to put their best foot forward with new turbines. They will have only about eight months of service with the new machines when they will be back on Capitol Hill again looking for dollar support for another year.

But they will have to do a better job of selling than in the past to come off as well as the $6 million voted in fiscal 1962. From fiscal 1954 through 1961 Congress will have put $37.6 million into the helicopter experiment and only a convincing demonstration with the S-61 and 107 will brighten the prospects of further subsidy.

There is a good case to be made for continuing subsidy and for Congress to pull the rug out from under the experiment at this time would be a nearsighted approach to solving the nation's shorthaul transportation problems.

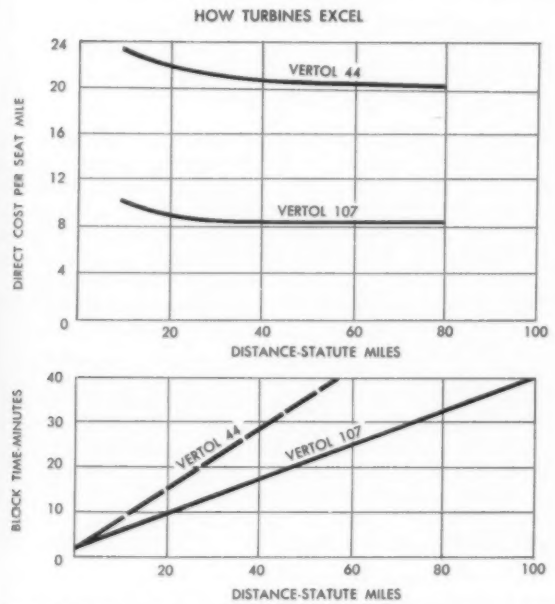
Even with the cost headaches of piston helicopters, the three carriers have cut subsidy per available seat-mile from $3 61 in 1954 to only 26¢ in 1960. The military has, and will continue to derive significant dollar savings from the prolonged component life times proven out by commercial helicopter airlines.

The Vertol 107 is a commercial development which has since been selected by the Marines for assault transport duty at an obvious saving of millions of dollars in development funds.

Delay to real moneymakers

Then, too, the present pair of turbines are the natural stepping stones to the next generation of 40-to-50 passenger models which will assure operators of complete subsidy-free operation. A delay now in expansion of turbine operations through lack of subsidy could set back materially the timetable for emergence of these improved models.

Such a move would also put the U.S. into a second-rate position in helicopter transportation after leading the world for the past decade. Japan, one of the few wealthy nations



HOW VERTOL plots direct costs. New 107 brings costs below 10¢ per available seat-mile, shows marked drop in block time.

with a poor transportation system, has recognized its merits and is emerging as the strongest helicopter market in the world, exceeding even the U.S.

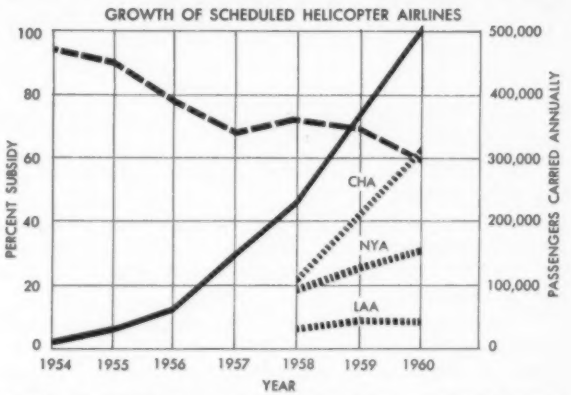
In Europe, both Sabena and British European Airways are about to make a move, both buying U.S. equipment. KLM and Lufthansa are showing increasing interest and probably will follow shortly thereafter. Other European flag carriers will have little choice but to match their services on the continent or sacrifice their competitive position.

Although technically the new helicopters are as different as night and day—one tandem and one single rotor—the big thing they have in common is the General Electric CT58 turbine. Weighing only 300 lbs. (two mechanics can carry it), it will be the source of drastic reduction in maintenance costs.

Helicopter piston engines, running out of their element at 80% of power, were confined to low overhaul periods. Turbines, however, enjoy operation at a high percentage of their rated power and will begin operations at overhaul periods well in excess of those achieved on piston 'copters.

And FAA is giving the new machines the benefit of the turbine's ability to operate at high powers to soften the blow of payload restrictions under engine-out operation. A takeoff power rating will be permitted for one-half hour in estimating engine-out performance and payload.

As somewhat of a prelude of what to expect from the turbines, Los Angeles Airways' operation of the Sikorsky

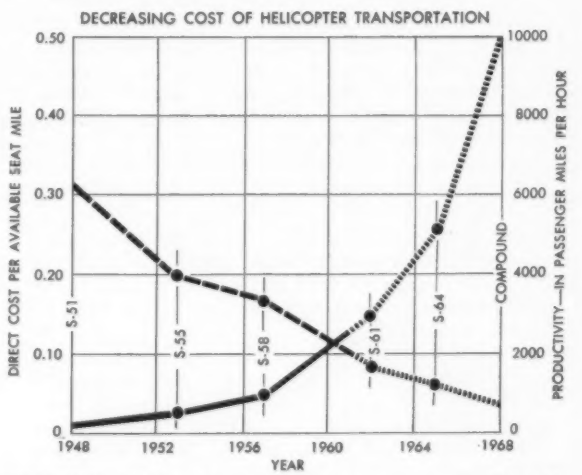


GOOD RECORD of operators to date shows consistent increase in traffic and decline in reliance on subsidy.

S-62 with a single CT58 is showing maintenance man-hours per flight hour of only one-fourth those of the piston counterpart S-55.

Plenty of test experience

And both are benefiting, too, from the testing of current military counterparts. Sikorsky has a good 5000 hrs. on the S-61 and HSS-2 as the first delivery approaches and it will log another 4000 in airline operations between now and next May.



SIKORSKY PLOTS 20 years of 'copter progress. Next big advance comes with second-generation turbines.

Vertol has accumulated 1261 hours with 107 type helicopters including 676 hours with the 107 prototype which is powered by a Lycoming T53. This helicopter recently returned to the U.S. from Europe where it breezed through 105 flight hours without so much as a spare engine to support its heavy short-hop schedule.

All in all, the switch to turbines in transport helicopters offers too much to be denied. They're faster, more economic, less noisy, and capable of all-weather operation. The industry, both manufacturers and operators, can ill afford to put anything but their best effort into seeing that they live up to their promise. ■

Air Fares Active On All Fronts

THERE WERE 717,683 empty seats on North Atlantic airlines in the first half of 1961.

U.S. trunks had 12.4 billion unused seat-miles in the first seven months.

These facts point up the Big Problem: how to fill the mounting number of seats. But, so far, both Atlantic and U.S. carriers seem able to agree on only one point: they have a problem.

When it comes to solutions, they have gone off in several directions—or have done nothing.

Atlantic lines met in London and viewed the situation with alarm. But, after debating a wide variety of sharply reduced group fares and excursion tariffs, they failed to agree. Result: Atlantic fares remain unchanged, at least for the time being.

Only one agreement—Europe

IATA members did agree on one point: they raised fares within Europe 5% from Nov. 1.

Three U.S. transcontinentals are trying—two of them reluctantly—a new roundtrip excursion fare, first proposed by TWA. American and United protested, then put the fare into effect only for competitive reasons.

Closest the industry came to agreement was on American's plan to carry youths 12 through 21 years of age for half of the first-class fare. Only two of 11 trunks objected. The tariff was slated to become effective at presstime, unless blocked by CAB.

And, while disagreeing on these promotional reductions, the trunks, at least for a while, had trouble getting together on a jet coach fare increase of about $1 per ticket, designed to bring coach charges as close to first-class as CAB will allow. Eastern balked, and other lines did not file the increase on routes competitive with EAL. The latter then changed its mind and filed.

Lack of agreement on the Atlantic resulted from long-standing conflict between smaller European lines on the one hand and U.S. and larger Europeans on the other. However, the latter group feels so strongly that promotional fares are urgently needed that some observers are convinced that somehow lower rates will be forthcoming before too long.

Smaller European carriers are fighting lower fares because they believe such a step would cut revenue without increasing traffic. They point to the off-season 17-day excursion as having diverted at least as much business as it created.

But other companies feel the excursion succeeded in generating new business in North America even if it was less successful in Europe. They say many businessmen took their wives with them; some companies sent two executives instead of one. Some add, however, that to attract a large number of vacationists, the fare must be spread over more months and must be good for at least 21 days.

There is also a feeling in some circles that a substantial cut in the regular fare would be better than a number of different promotional schemes.

With everyone talking about empty seats, the reasoning behind the seemingly inconsistent 5% boost in European fares seems to be that the increase will bring in more revenue because it will not stop anyone from flying who flies at present—most travelers are businessmen who will pay the 5% without too much complaint.

Youth fares and excursions

Sharp differences between U.S. trunks were evident following the filing of TWA's excursion and American's youth fare. TWA claims the transcontinental roundtrips of $198 jet and $178 piston, plus tax, will attract vacationers who now travel by auto. Just before start of service on Aug. 16, the company had 5,604 bookings under the new tariff.

An average couple driving across the country will spend $406 roundtrip, and take many days, compared with the $396-plus-tax excursion with only a few hours travel time, TWA says.

AA and UAL believe the fare is "economically unsound," will divert existing traffic and result in "severe revenue losses." However, they went along for competitive reasons. CAB approved the tariff, calling it a "promising attempt to stimulate air travel . . ."

AA believes its youth fare will attract new business. The 12-21 age group makes up 15% of the population while constituting only 3% of air travelers. Principal objectors were Eastern and Braniff. EAL feels revenues would be diluted too much in relation to traffic attracted. It claims the no-show problem would also be aggravated.

Passengers covered by the tariff, which bans reservations more than three hours before departure, could make ordinary reservations in advance. If space were available under the youth program, they could cancel prior reservations and travel under the reduced fare. ■

New Fares in the U.S.

Domestic airlines fare activity during the past 45 days included:

TWA: Inaugurated on Aug. 16 roundtrip coast-to-coast excursion fares of $198 jet and $178 piston, plus tax. Also in effect on American and United. Fares apply from noon Monday to noon Friday. Travel must be completed in not less than 13 days nor more than 30 days. Stopovers cost $5.

American: Proposes to carry youths 12 through 21 for 50% of first-class fare, without restriction on days of week. Reservations cannot be made more than three hours before flight. Travelers would fill up coach compartments first, then first-class. No surcharges. Six-month experiment starting Aug. 30, unless blocked by CAB.

Bonanza: Started one-year experimental youth fare, ages 12 through 21 at 50% of first-class fare. Issues youth identification cards at $2 per year. Advance reservations permitted. No restriction on days of week. Travel must be roundtrip, completed within four months.

Assn. of Local Transport Airlines: Expected to propose a plan under which visitors from abroad can buy a one-price ticket good for unlimited travel on any local service line. Bonanza is proposing an "unlimited travel" tariff, effective Oct. 1, allowing persons from outside its area to fly anywhere on its routes for $90 for 15 days, $160 for 30 days.

Ozark: Placed into effect excursions giving 70% reduction on return portion. Good between 41 pairs of points; three-month experimental basis. Travel must be completed within 11 days. No restrictions on days of week.

Trans-Texas: Placed into effect fare cuts equaling 32% in certain short-haul markets.

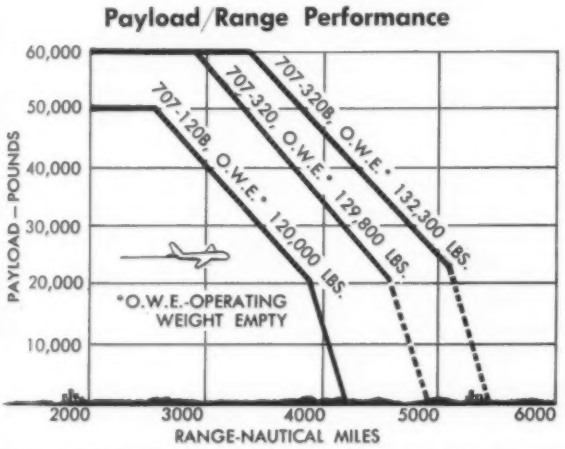
Boeing, Douglas Plan for Quick Airlift

Proposal to modify airline jets would produce 81 cargo transports at cost of only $30 million within 18 months

IF THE MILITARY, the Congress and the Kennedy Administration are really interested in moving fast to modernize U.S. airlift potential, Boeing and Douglas have figured out one way to do the job in 12 to 18 months.

The bids by the big jet builders, presented to the Commerce Department's Defense Air Transportation Administration, would make 81 airline jets convertible virtually overnight into military cargo carriers at a cost of about $30 million.

Presumably there would be other costs. The airlines would want to be paid for the out-of-service time for modification and probably some recurring subsidy for carrying around the extra weight that installation of a big cargo door and heavy floor would entail. Plans are still being worked out and the airlines have yet to be approached by Commerce with a definite proposal.



HOW THREE BOEINGS would perform as CRAF cargo carriers. "B" models have turbofan engines.

The details of the Boeing and Douglas presentations to DATA, however, have been clearly defined.

Boeing estimates that a block of 50 707s could be altered for quick cargo capability for $280,000 per plane if it did the work or $165,000 per kit plus $35,000 for pallet rails if the airlines modified them.

Assuming an immediate go ahead, Boeing could deliver the first conversion in August 1962 and first kits could go to airlines in September. Once modified, the jets could be switched into CRAF (Civil Reserve Air Fleet) configuration in 48 hours.

Jet Trader costs considered

Douglas figures that each of the 31 airline long-range DC-8s could be modified for $567,000 or about $17.5 million for the fleet. To keep its price at the lowest possible level Douglas distributed its costs over 61 aircraft, the 31 CRAF eligibles and 30 other DC-8 Jet Traders it hopes to sell on the commercial market.

If the go-ahead signal were given on October 1, Douglas says it could begin modification by June 1, 1962 and turn out the first article on September 1. A 65-working-day elapsed out-of-service time would decrease to only 27 days by the 17th airplane.

In all, Boeing tabs 73 big jets as eligible for CRAF overseas duty. There are 24 of American Airlines' fan-powered-120Bs, 26 Pan Am -320s and five -320Bs and TWA's 12 -320s and six -320Bs.

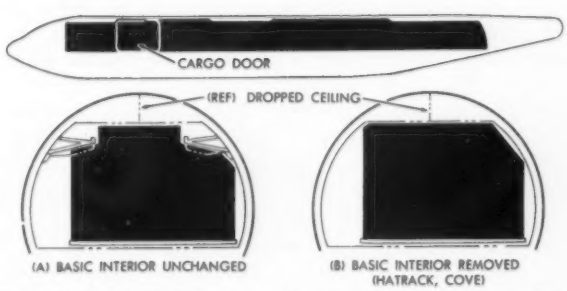
The 31 DC-8s would include 19 of Pan Am's, five of Northwest's, three of United's and four of Panagra's.

Boeing says a fleet of only 35 707-320s would do the work of 146 piston types now assigned to CRAF including 17 DC-7CFs, 43 1049Hs, 12 1649s, 12 DC-7Fs, 31 DC-6As and 31 DC-4s. Each 707-320 could deliver about 210 tons per week (Travis to Hickam AFB) or about triple that of the best piston types, the DC7-CF and 1049H.

High payload potential

The modified -320B could haul 60,000 lbs. out to about 3400 n.mi. range, the -320 to about 3000 n.mi. The -120B could haul 50,000 lbs. over a 2600 n.mi. range. Addition of the 91 by 134 in. cargo door and floor modifications would add 1210 lbs. or less than 1% of the -320's operating weight empty. However, the net change in empty weight would be minus 4650 lbs. with passenger furnishings removed for CRAF duty.

Payload capacity of the fan-powered DC-8 would range up to 62,274 lbs. for such missions as McGuire AFB to Rhein/Main (3397 n.mi.) and would cost 5.33¢ per ton/n/mi based on a block time of 7.06 hrs. Douglas figures the direct cost to airlines of added CRAF provisions over the 3750 n.mi. New York-Rome segment would be about $29 reflecting an increase in trip cost from $7343 at present to $7372.



BIG CARGO DOOR shown in top sketch is major item. Lower figures show alternative cabin profiles.

The modified DC-8 would have a cargo volume of 8340 cu. ft. including 6950 in the main cabin, 690 in the forward lower hatch and 700 cu. ft. aft. The 707 main cabin (palletized) would offer 4369 cu. ft. and the lower compartments 1680 for a total of 6049 cu. ft.

By way of comparison, the Air Force's Lockheed C-141 cargo jet being developed for 1964 delivery will carry an 80,000 lb. payload over a 3430 n.mi. segment, gross 315,000 lb., cruise at 440 knots (long-range) and will have a useful volume of 7156 cu. ft. ■

British Air Transport in the Melting Pot

Independent airlines battle for status as licensing board hints at broad route shakeup

By MICHAEL DONNE

OVER THE PAST FEW MONTHS, the whole future of British air transport, both domestic and international, has been in the melting pot. The British government, after years of vacillation, has finally determined to rearrange the pattern of air transport to give the independent airlines a bigger share of the total market.

The independents represent a substantial segment of British air transport. For years they have proved their ingenuity, integrity and ability by operating profitably a wide range of "fringe" services—ad hoc charter work; government trooping contracts; cheap-fare "colonial coach class" services to various commonwealth destinations; inclusive tour holiday flights; and specialized operations such as flying of automobiles across the English Channel to the continent.

They have also been allowed, in the guise of "associates" of the two state-owned airways corporations, BOAC and BEA, to fly a limited number of scheduled services, both domestically in the U.K. and internationally to Europe.

But all these operations have hitherto been limited by the terms of the licenses granted to the independents by th government's Air Transport Advisory Council—the body which formerly governed the granting of operating rights to all British airlines.

In some cases, these licenses were for short periods only —as short as one summer season—and even the longest periods of tenure rarely went beyond seven years. Thus, the independents were confined not only to a limited sphere of operations, but also to a limited operating life.

It says much for their energy and acumen that they managed to stay in business, quite apart from earning profits, under such circumstances, all the time seeing the most lucrative of British domestic and international air routes reserved almost exclusively to the state airways corporations.

It is not surprising, therefore, that for years they battered on the government's door, demanding to be given a bigger slice of the cake. The conservative administration, returned to power in 1951, promised it to them, and then sat back for years, preserving the status quo, apparently deaf.

Action at last

Then the conservative party was returned to office for the third successive time in 1959. It seemed then that things were going to change—and change they did. The first measures adopted by the government included the formation of a new ministry, the Ministry of Aviation, out of the old Ministry of Supply and the civil air transport side of the former Ministry of Transport and Civil Aviation.

The first Minister, Mr. Duncan Sandys, who had won a reputation for toughness and ability as Minister of Defense, immediately set to work. He not only instituted the round of mergers in the British aircraft industry, resulting in the emergence of three major airframe manufacturing groups and two major engine manufacturers, but also he was largely responsible for a massive rationalisation in the independent air transport industry.

Two of the biggest independent airlines, Airwork and Hunting-Clan Air Transport, merged to form British United

CROSS-CHANNEL air ferry (above) was pioneered by Silver City Airways. Carrier now seeks new aircraft, new routes.

Airways, which today also includes such carriers as Transair, Channel Air Bridge, Air Charter, Morton Air Services, Olley Air Services, and Bristow Helicopters. British United, backed by a good deal of shipping capital, today has one of the largest fleets of any British airline, including Viscounts, Britannias, piston-engined aircraft and helicopters. It has on firm order four Vickers VC-10 long-range jets and ten of the new British Aircraft Corporation's BAC-One-Eleven short-range jet airliners.

Later, another major step in the independents' overall rationalisation program occurred when the Eagle Airways Group was acquired by the Cunard Steam-Ship Company to form Cunard Eagle Airways.

Shipping interests mount

At the same time, another major group, British Aviation Services, has also emerged, owned by another major shipping group, Peninsular & Oriental Steam Navigation, and incorporating such carriers as Silver City Airways, which pioneered the cross-channel vehicle air ferries.

This movement of shipping capital into the British independent airlines has been one of the most significant features of British air transport since the war. It is largely with the aid of shipping money that the independent airlines have been able to re-equip with modern aircraft, and to order big jets. Cunard Eagle, for example, is buying Boeing 707s, while Silver City is looking around for a new type of vehicle air ferry aircraft.

With rationalisation under way, the government's next move was to pass through Parliament—not without difficulty—the Civil Aviation (Licensing) Act of 1960.

This act did two things, and these are the key to everything that is happening in British air transport today. First, it repealed those sections of earlier Acts of Parliament which gave the two state airways corporations the virtual monopoly of all scheduled air services by British flag carriers inside and outside the U.K. This automatically cleared the way for the independents to seek rights to many of the routes hitherto reserved exclusively to the state airways corporations.

Secondly, the new act swept away the old Air Transport Advisory Council, replacing it with the new Air

Transport Licensing Board. This board has as its primary function the duty to determine, after lengthy hearings, which British airlines shall fly which domestic and international air routes.

The board, under its chairman, Professor D. T. Jack, an eminent economist who has served on a large number of government bodies, began its work this year. As was to be expected, the British independents made many applications to the board for rights to fly a large number of routes. The initial applications were later revised, and at the time of writing the basic applications by the largest independents are:

Seeks holiday routes

By British United Airways: From London (Gatwich) to Paris, Brussels, Amsterdam, Frankfurt, Dusseldorf, Munich, Cologne, Zurich, Basle, Tarbes/Lourdes, Nice, Naples, Milan, Rome, Geona, Athens, Nicosia, Barcelona, Palma, Lisbon, Madeira and Dublin.

British United is also seeking rights to a number of holiday destinations in the Mediterranean area, and to Commonwealth and colonial destinations in Africa and the Far East.

By Cunard Eagle Airways: From London (Heathrow) to Hamburg and Berlin, Copenhagen and Stockholm, Nice and/or Palermo and/or Malta, Turin, Milan, Venice, Dublin, Geneva, Liverpool-Isle of Man-Belfast, Liverpool, Edinburgh, Glasgow, Birmingham, and Manchester.

It has also applied for rights to Nice and Dublin and the Channel Islands from Manchester and/or Birmingham, and for the North Atlantic air route to U.S. east coast cities, from London.

These two airlines, by mutual arrangement, withdrew their objections to each other's applications before the board. In addition to these routes, however, there are many other applications now pending before the board from many other independent airlines, including Silver City Airways, Starways, Overseas Aviation, and Tradair.

Bids often clash

Some of the applications clash—indeed, it frequently happens that not only are the independents fighting BEA or BOAC, but also they are fighting each other. It is the board's duty to sort out all these opposing applications, and after hearing the evidence from both sides, reach decisions and award routes.

At the time of writing, only one major route award has been announced—that of a 15-year license to Cunard Eagle Airways to fly the North Atlantic once daily in each direction, linking the U.K. with U.S. east coast cities.

Inevitably, the hearings before the board are lengthy and sometimes acrimonious. The two state airways are bitterly opposing every application the independents make, on the grounds that to permit them to fly the routes either in parallel or in competition will be to materially divert traffic from the corporations and thus damage the long-term interests of British air transport.

On the other hand, the independents argue that while they may initially take some traffic from the corporations, in the long run traffic is expanding sufficiently to ensure that there will be room for two British carriers on most routes.

One thing is already clear: British air transport will never be the same again. Everybody is hoping that it will emerge refined, strengthened and envigorated, ready to meet the intensifying competition on European and other world air routes. Whether it does so, remains to be seen. ■

Allegheny's Barnes

Local Airlines Take the Lead In Move to Diversify

Allegheny and Mohawk are most active, trunks also increase 'outside' business

THE SURPRISE MOVE by Allegheny Airlines into half-ownership of a car rental firm marks a new highspot in the trend among local airlines to diversify.

Although its president Leslie O. Barnes is not the first local head to look elsewhere for sources of income, he certainly has become the most aggressive. Before the $2,000,000 deal with National Car Rental System, Allegheny made known preliminary plans to build a $4 million aircraft service and fixed base operation at Greater Pittsburgh Airport. Barnes' plans here are far-reaching. Aircraft leasing to executive operators, distributorships, even aircraft sales representation, are among them.

And there will be more to come from Allegheny. Barnes makes no secret of the fact that he has other plans to diversify and another major move could come in about six months. His philosophy on the potential of locals in this direction makes this evident.

The locals, says Barnes, have a unique business potential in the areas they serve, but to date they have been like a country store that sells only eggs. It's about time, he feels, that they take advantage of the market and put some meat and potatoes on their shelves, too.

Mohawk's president Robert E. Peach is another supporter of local airline diversification. Since Mohawk opened its new base in Utica, the carrier has steadily built up its outside maintenance and service business to the point where this year's take will run better than $500,000.

In only about 18 months it has attracted 15 "steady" customers among executive operators. Its program is versatile, providing routine 100-hr. checks, engine changes, relicensing, phase overhaul programs and, more recently, an expanded capability for interior work.

It also provides a flight crew and continuous service for several operators. Cornell University and the C&O Railroad are examples. Other customers, such as Texas Instruments, Sears Roebuck and Cities Service, come to Mohawk from a distance for service.

The net result for the carrier is not only the profit on its

service operation, but the buildup of a nucleus of servicing personnel, mechanics and electronic technicians to better handle its routine airline maintenance.

The new moves by Allegheny and Mohawk, however, are not unlike those of Piedmont Airlines and Southern Airways with their longstanding and successful fixed-base services at Winston-Salem and Atlanta. Nor are the locals alone in seeking outside activities. Both United and American are expanding their outside sales efforts for contract aircraft maintenance. United plans to be overhauling Wright Turbo Compound engines through 1965 and is eyeing both civil and military business in this area.

It also "sells" a pilot training course and trains executive pilots for selected customers.

American has lined up contracts with 20 customers in the first six months since getting an FAA repair station rating for its Tulsa base.

Several U.S. international airlines have moved into outside services on an expanded scale. Mackey Airlines, for example, recently opened a new fixed-base facility at Broward County International Airport at Ft. Lauderdale, Fla.

Alaska Airlines, in a deal with Lockheed Aircraft International for five Model 60 bush transports, also became sales representative for Washington and Alaska. ■

Fast Answers on Interline Space

New Univac system would automate inter-carrier transactions by 1963 if all agree to buy it

By ERIC BRAMLEY

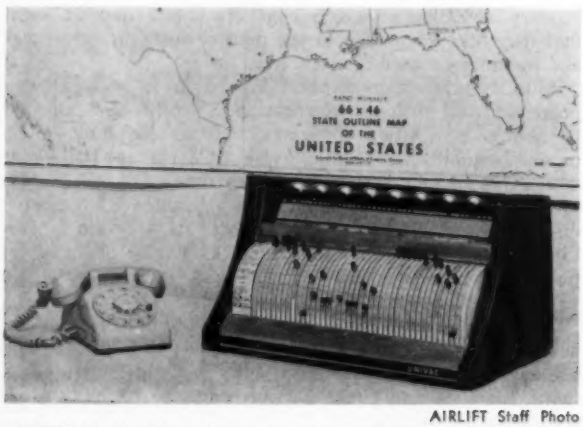
AN ELECTRONIC METHOD of handling interline reservations in less than one minute per transaction at a cost of 12¢ per message is arousing considerable interest among U.S. airlines.

Called AID (Airline Interline Development), the new system, as blueprinted by Remington Rand Univac Division of Sperry Rand Corp., could make, cancel or change a reservation on another carrier in a matter of seconds by querying a central computer in Chicago. It would use a nationwide communications network of 152 telephone lines and 21 teletype lines to tie all reservations offices to the computer.

AID can be operational by mid-1963 if all airlines agree to accept it by the end of this year. Value of the system would, of course, be questionable if it were not used on an industrywide basis. Already Sperry Rand has "certificates of interest" from 10 carriers—Eastern, American, United, Northwest, Delta, Northeast, North Central, Ozark, Mohawk and Allegheny.

A non-binding interest

These certificates are not formal orders, but they show a positive interest on the part of the airlines and signify their agreement to evaluate the final system. TWA and Braniff are also interested, but have not yet signed.



AIRLIFT Staff Photo

INQUIRY-ANSWER device permits agent to compose message which is transmitted automatically when phone is dialed.

AID's central computer would not contain an inventory of all airline space. Instead, it would store availability—it would continue to sell seats until a "stop sale" message was received from a carrier on a particular flight.

ABCs of AID

Here's how the system works: An agent for Airline A in City B receives a request for space involving connection with Airline C for City D. To obtain a seat on Airline C, he uses an inquiry-answer device attached to a telephone trunk (there would be several such devices in a large office, but not one for each phone). This device, which is 18 in. by 12 in. by 9 in., sends alphabetic or numeric messages, which the agent composes by pulling levers. The message is displayed visually for pre-transmission verification.

After the message has been composed, the agent dials the phone, is connected with the computer and the request is automatically transmitted. The computer checks to see that: the message is complete; delivering flight and receiving flight meet connecting time limits; receiving flight operates between cities specified and delivering flight operates from city making the sale or from boarding point specified; both flights operate on the day of the week or date of month specified; space is available; transaction is not a duplication.

The agent then receives a recorded voice answer (for example, "Confirm, space okay"). The computer stores the passenger's name and itinerary and sends a booking message via teletype to Airline C, the receiving carrier.

Everything happens in seconds

An average message of 30 characters can be composed by an agent in 30 seconds. Transmission requires two seconds and voice reply two seconds—plus whatever time is required to dial the phone (automatic "repertory dial equipment" may be used in large offices). In some cases, today's interline reservations may take hours, and handling by several different people increases the chances for error.

Unit message cost, with all airlines participating, would be 12¢, Sperry Rand says. Monthly rental for each inquiry-answer device is $30 and each AT&T subset transmitter costs $10 a month.

The company states that AID will more than pay for itself, because, among other things, it will reduce local and long distance toll charges, cut private line teletype utilization, and require fewer agents. ■

WESTINGHOUSE BRUSHLESS GENERATORS . . . flight proved on both commercial and military aircraft

NEWEST JET TRANSPORT / NEWEST ELECTRIC POWER SYSTEM

Advanced Westinghouse electric power systems featuring unique starter/generators have been selected for the new Boeing 727 jet transports.

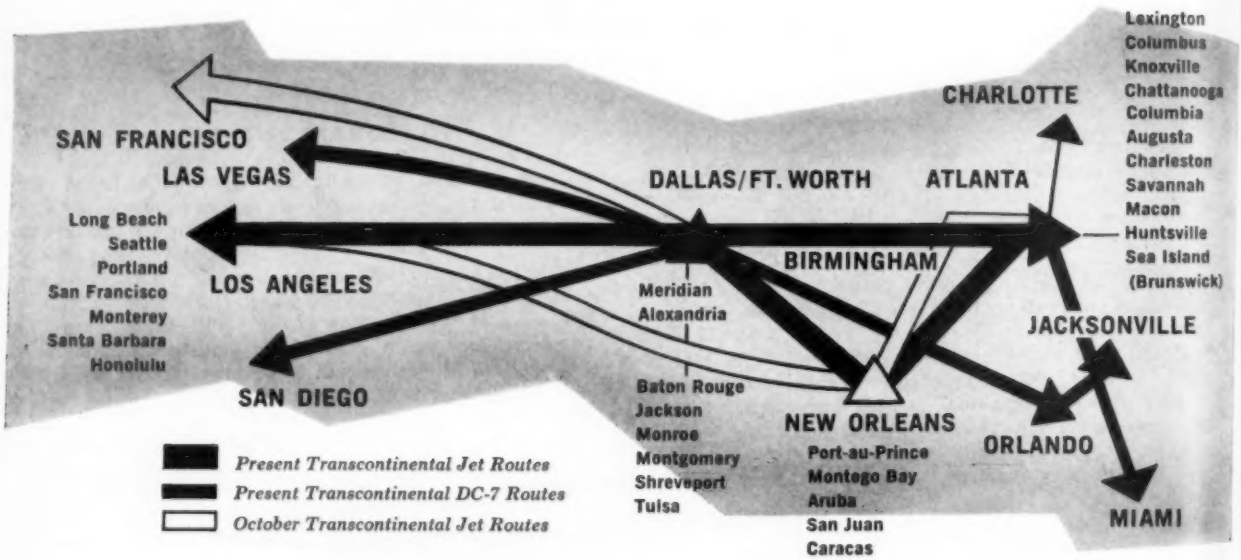
The Westinghouse equipment will serve first as powerful jet engine starters, then operate as brushless a-c generators to supply the sleek transports with electric power.

This brushless starter/generator will utilize a rectifier assembly of high temperature silicon diodes, which have achieved outstanding performance on Boeing Jetliners and major military aircraft. Silicon diodes are used instead of carbon brushes, commutators and slip rings . . . resulting in greater reliability—increased TBO and reduced maintenance costs.

Complete aircraft electric power systems and utilization equipment including starter/generators, generators, control panels, regulators, motors and transformer-rectifier units are all designed and built by the Aerospace Electrical Department, Lima, Ohio. *You can be sure . . . if its*

Westinghouse

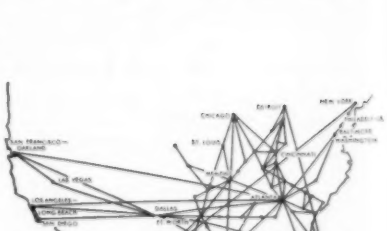
EAST COAST
WEST COAST



NOW DELTA JETS SERVE BOTH!

Los Angeles and Atlanta are now focal points for fast connections to scores of neighboring cities

Delta's new transcontinental skyway to major terminals also provides service to dozens of neighboring cities, via convenient connections at each end of the line. And southern transcontinental service will be expanded to even more cities in October, when Delta inaugurates jet service between San Francisco - Dallas - New Orleans and Atlanta . . . and between Birmingham - New Orleans - Los Angeles.



Delta System Route Map

DELTA

the air line with the BIG JETS

• **Here's one for the books.** In *Printer's Ink* magazine for July 28 appeared an advertisement for the Westchester Rockland Group of newspapers in New York state, with the heading "three-point landing." There's an illustration of a transport airplane, but what an airplane! It's an Aeroflot Tu-114 in landing position. Now what advertising agency ever picked out a Russian airplane to illustrate an ad of this kind?

• **Watch those airport** parking lot tickets! Friend of ours entered the parking lot at Standiford Field, Louisville, and got a ticket with time stamped on it. Standiford offers 30 minutes free, a good idea. But when our friend left, thinking he was well within the half hour, he was charged a quarter.

Making a check, he discovered the time clock on the machine was 10 minutes off, and finally got his money back. Later he found that the machine was 10 minutes off for at least 12 hours. How many parkers got nicked during that period and failed to object?

• **Hidden talent department:** Remember that very catchy, "It Must Be True," that was popular about 20 years ago and has been enjoying somewhat of a comeback? Lyrics were written by Hal Carr, president of North Central Airlines, way back when he was attending Texas A&M. Carr says, however, that he wasn't showing much promise of reaching the top of the heap in the music world. He ground out scores of other lyrics that never saw the light of day.

• **R. T. Bellchambers,** one of the real old-timers of aviation who piloted some of the earliest airplanes in commercial service in Florida, now operates United Tours, a travel agency in Daytona Beach. (Looking for an old-timer? *AIRLIFT* will try to locate him for you. Write The Editor, *AIRLIFT*, 1001 Vermont Ave. N.W., Washington 5, D.C.).

• **John Franklin,** former senior v.p.-operations of former Capital Airlines, who went back to flying a year before the merger with United, is flying United's Boeing 720s on north-south routes—and likes the cockpit a lot better than a desk job.

Now 52, he says he'll fly until retirement at 60, despite being offered over $1 million for his farm near Dulles International Airport, Washington. "If I retired, what in the world would I do?" he asks. "I like to fly. I'm going to keep flying."

• **Here's how** front-end noise and vibration were considerably lessened in British European Airways' turboprop Vanguards: Engineers experimented (unsuccessfully) time and again with changes in the front end of the plane, finally eased the problem by adding weight in the tail.

• **Maybe this** is the answer to the sonic boom problem:

A scientist living at Staines
Is searching with infinite pains
For a new type of sound
Which he hopes, when it's found
Will travel much faster than planes.

• **Southern Airways** serves the only privately-owned bomber base in the country. It's Tullahoma, Tenn., where 77-year-old John Harton, the town's leading (and wealthy) citizen, owns Northern Field. Harton, who has never flown in an airplane, bought the 1300-acre base as war surplus for $138,000, is now actually making a profit.

"No, I didn't need that airport," he says, "but I just had to have it. Didn't you ever see something you just had to have?" He's a big booster of Southern—but Southern can't get him to take a flight.

• **Have you noticed** some of those sweet young things now serving as TWA international hostesses? This is a switch from a few months ago. International assignments have been made on a seniority basis and the requirement that girls must speak a second language more or less fluently has never been too strictly enforced. Result was that many of the older gals were able to bid successfully even though their second language may have needed plenty of improvement. Now, however, TWA is insisting that the language requirement means what it says. This has opened the way for some younger talent.

• **United Air Lines** reportedly spends $25,000 monthly replacing silverware filched by souvenir-seeking passengers. This is quite a figure even for genuine silver-plated silverware. Another figure of note: United recently opened its 16th U.S. flight kitchen, a $250,000 facility at Boston, superintended by chef Paul Sofi.

RUSH SHIPMENT, part of record commercial airlift, sees cargo lashed to seats of KLM plane, pillows and blankets still in racks. Shipment was part of 2-million lb. airlift of Union Carbide insecticide from U.S. to Egypt to help save Egyptian cotton crop threatened by armyworms. Airlift was completed in 18 days during August, with over 100 jets and piston planes participating. Other airlines involved were Alitalia, Irish, Swissair, Pan Am, TWA and Pakistan.

TECHNICALLY SPEAKING

By Joe Murphy

FAA's strange procurement habits . . . A new name in instruments . . . On-time doings

Is this progress?—When FAA took on its new look and a semi-military procurement atmosphere set in, we had our reservations as to its success. The more we hear of what happened to one of its programs, the more we are convinced the Administrator has himself a major job of housecleaning.

The classic example is scan conversion equipment so badly needed by ATC people. FAA bought a few off-the-shelf about three years ago, but then the spec-writing bug bit its engineers. First contract went to Admiral, really an R&D project but disguised as production. To our knowledge, after two years there's only one installed (at NAFEC) and another dozen or so "accepted" along with a fight for more than $1 million in liquidated contract damages.

Next came an award to Radio Receptor Co., a subsidiary of General Instruments, again for a few million. Still no results. More liquidated damages being sought.

On the third round, Mr. Halaby stepped in and picked the winner (Raytheon) although its bid was not the lowest by some $2 million. We hope this is a sign somebody is out to break the logjam and restore FAA as an agency the better electronics firms would like to do business with. But in the meantime, with usable equipment available off-the-shelf, the safety of ATC has to be content with 15-year old VG displays the Navy junked after World War II.

Watch Astek—There's a new name among airline instrument suppliers in the U.S. and it's one that has all the earmarks of a winner from the start. The name is Astek Instrument Corp. and it is housed in a smart converted medical building up in Armonk, N.Y.

We called on Everett Schroeder, Astek's president there recently, and were impressed no end with the briefing he gave us on the plans and goals of the fledgling firm. Their specialty is air data instruments—airspeed indicators, altimeters and air data systems.

There's good reason. Virtually every name on the roster of about 15 officers and top engineers is an alumnus of Kollsman Instrument Corp. It seems that policies at Kollsman tended to shift emphasis away from airline instrumentation and this band of experts decided to strike out on their own.

Although their first big target is to sell instruments and an air data system on the Boeing 727 (see diagrams), the first business has come from Bill Lear's Swiss American Aircraft Corp. for the SAAC 23 executive jet. Whether or not Astek's recent report to stockholders reflects what its management feels has been wrong in the past, it is certainly music to the ears of airlines in their search for suppliers who not only want the initial business from transport builders, but also are interested in supporting their product.

Helicopter maturity—A recent call at Boeing Vertol convinced us that the Seattle jet builder is making its impressions in furthering the competitive position of its helicopter division. On the interior for new 107, for example, industrial designer Walter Dorwin Teague Associates was called in and the result is a right good-looking layout with large 17 by 19 in. windows (they were originally oval) and smart, comfortable Hardeman seats.

A few days later at Sikorsky we viewed the Raymond Loewy touch in the S-61L. Again, large windows, smart decor. Interiors of both new 'copters are a good match for the most modern fixed-wing jet.

On-time rewards—We certainly stirred up a hornet's nest since the first publication of the industry's performance back in August 1959. We recall the major trunk (no longer on the books) that held back its reports so its record wouldn't show.

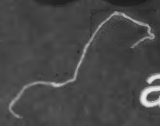
Then there was the CAB staff memo (we didn't get one) which credited us with making airline top management more conscious of the subject to the betterment of service.

Now we hear of airlines forming "on-time" committees, Eastern and Ozark for example. Now the only problem is to get a few carriers to file their on-time data to CAB on time.

Jet fueling—Had a chance to look over the last word in mobile hydrant fueling units being developed by Garsite, Inc. out at Seaford, L.I. for Lockheed Air Terminal's contract fueling operation at Chicago's O'Hare Int'l Airport. It has every imaginable protection against fuel contamination—a big Warner-Lewis filter and a special filter monitor by Purolator of Canada.

Delta test—Art Ford of Delta writes us that his airline's air data tests will be with a Sperry system, not Aikesearch as mentioned earlier. ■

NEW INSTRUMENTS at Astek are these altimeters, both the counter-type (left) and the three-pointer to suit customer's taste. Most airlines are leaning toward the counter type for the future. Final version will have drum on right side of dial instead of left as shown and only one pressure index.



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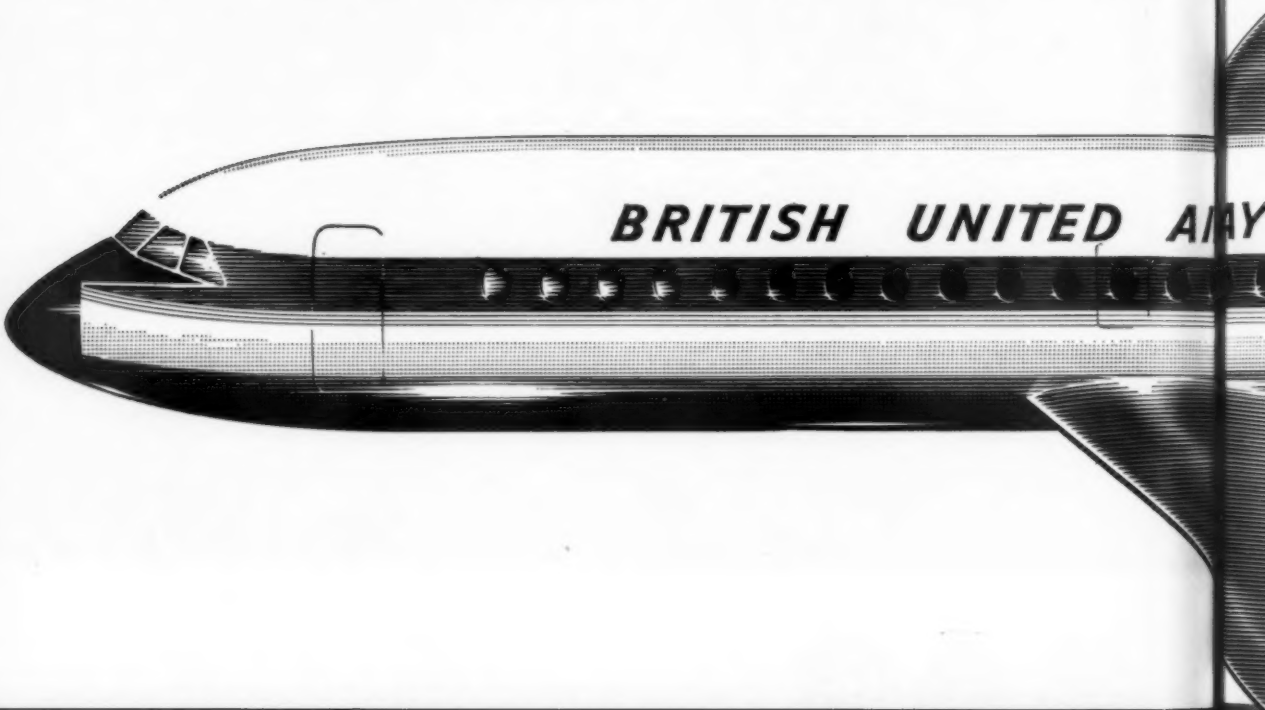

JET SUCCESSOR TO THE VISCOUNT

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ONE-ELEVEN

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- Short airfield performance
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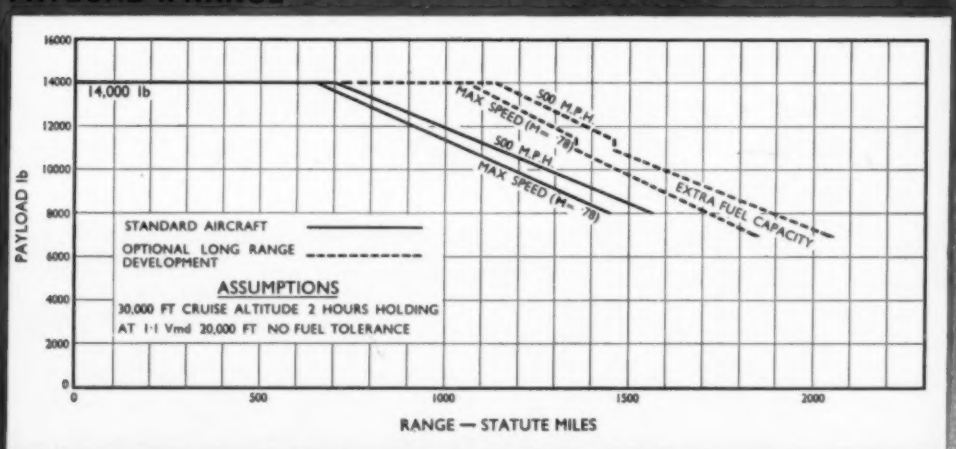
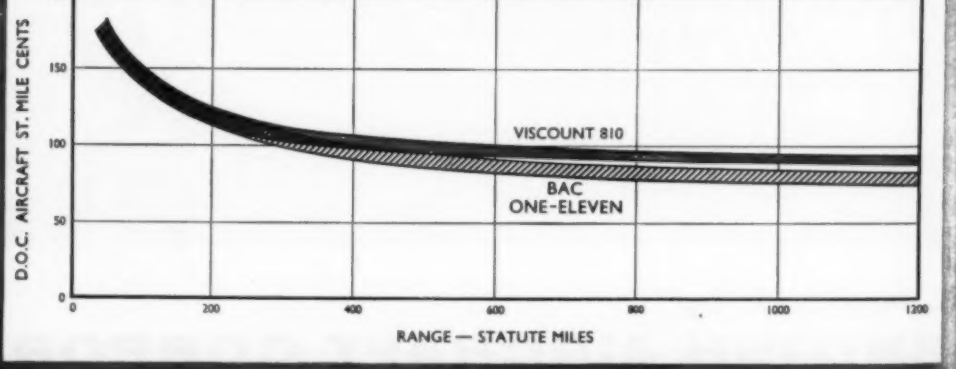


ECONOMICS

These bands cover seven separate methods of costing —ATA (1955), ATA (1960), SBAC and those of four airlines



BRITISH AIRCRAFT CORPORATION

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Fares, Finances Sink on Empty Seats

Flood of capacity and low first-half earnings bring fare schemes aimed at new business

By SELIG ALTSCHUL*

An oversupply of capacity is sweeping the airlines. This has set in motion moves serving to debase the fare structure. Thus, while air travel remains at its present plateau, a squeeze on earnings is worrying many carriers.

The domestic trunks, as a group, are estimated to have lost more than $15 million during the first six months of this year. This is on the heels of 1960 industry earnings of but $1.2 million—the lowest since 1948 when a net loss of $5 million was recorded.

For the twelve months ended June 30, 1961, the domestic trunks offered 49.5 billion seat-miles which were converted into 28.96 billion revenue passenger miles for a load factor of 58.50%. For the previous twelve month period the group had 48.06 billion available seat-miles of which 29.15 billion showed up as revenue passenger miles for a load factor of 60.69%.

Shift to coach felt

Compounding the pressure on airline earnings is the sharp swing from first class to coach traffic in the industry's "product mix." For example, for the twelve months ended June 30, 1961, coach passenger miles were up 15.5% over the previous twelve month period. First class traffic declined 14.2% during the same period.

Coach traffic—now largely in jets and priced at 75% of first class fares—represents at least 54% of total domestic airline volume. As recent as 1955, coach traffic accounted for but 35% of the industry's total volume.

A series of upward fare adjustments from January 1958 through October 1960, representing a cumulative increase over the period of about 25%, helped prevent an even greater debacle in airline earnings. Starting July 27, further increases in jet coach fares ranging to as high as 90% of first class tariffs were instituted for many of the airlines. While this current action should help boost revenues, a far greater offset may be present in the transcontinental excursion fares proposed to become effective around August 18. These and other promotional fares are of major significance to the industry's future.

*Mr. Altschul, a recognized aviation authority serving industry, government and the financial community in important advisory capacities, with this article is resuming as Contributing Financial Editor of AIRLIFT. He recently served as a member of the Task Force on National Aviation Goals, (Project Horizon). The views expressed here are his own.

The airlines present the interesting anomaly of tripling their volume during the past decade and yet working themselves into financial straits.

The difficulties stem from the excessive competition created by the overcertification of routes throughout the industry. In order to remain competitive each airline has sought to place itself in the strongest possible marketing position.

This has meant substantial commitments in jets and supporting facilities in recent years. To bring a full flowering of jet transportation on trunk routes in and beyond the United States has meant capital expenditures by the industry in excess of $3 billion through 1960.

Additional acquisitions of aircraft and supporting ground equipment will entail further capital outlays. As a result, the industry has assumed heavy debt and lease burdens which must be serviced by earnings.

Earning power—past, present and potential—is the fulcrum upon which the financial fortunes of the airlines rest. Recent airline earnings, however, have been most disappointing. They are definitely well below the standards established by the Civil Aeronautics Board in its four-year General Passenger Fare Investigation.

The Board concluded that the rate of return required by the domestic airlines would be 10.25% for American, Eastern, United, and TWA and 11.125% for the other then eight trunklines; or an average of 10.5% for the group. On an individual basis, only one carrier reached the prescribed standard in 1957 and but two in 1959. None met the standard in '58 and '60.

No guarantee on return

Thus, the Board's prescribed rate of return on the investment—considered minimal by financial authorities—is no guarantee but merely a hunting license.

The effect of low load factors and the immediate reaction on declining profit margins which in turn finds correlation with a low rate of return on the investment is shown in the accompanying table.

Fare increases were granted reluctantly by the CAB to relieve the industry's recurring financial distress. In its final decision on the General Passenger Fare Investigation Case issued in November, 1960, the Board declared" . . . The experience of the last three years represents a relatively extended period of reduced earnings, which cannot lightly be dismissed . . ."

But there is a limit to boosts in

Continued on page 35

Selected Operating and Financial Data

Domestic Trunk Airlines, 1955-1960
(Totals in Millions)

	Total Rev. Pass. Miles	Pass. Load Factor	Net Income	Profit Margin	Total Investment	Rate of Return on Investment
1955	19,217	64.05%	$63.1	5.6%	$ 604	11.6%
1956	21,643	64.12	57.7	4.6	711	9.6
1957	24,500	61.50	27.0	1.9	904	4.8
1958	24,437	60.05	44.8	3.0	1,067	6.5
1959	28,127	61.42	61.7	3.4	1,321	7.1
1960	29,233	59.47	1.2	0.1	1,580	2.9

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Continued from page 33

the fare structure. Aside from the normal regulatory resistance, there is reluctance to place fares in areas where markets may become more limited. Hence, for practical purposes, pressures are constantly at work keeping a ceiling on fares. But the same restraints do not operate on the cost side.

It is an anachronism that the airlines are a highly regulated industry but operate in an economic environment beyond their control under intensely competitive conditions.

For example, any boost in general industry wage rates has its effect on airline employes and their demands for higher pay. Fuel and other material price boosts are no respector of airline problems.

Of particular significance, too, are the various imposts made on the airline cost structure by what amounts to unilateral action by government instrumentalities other than the CAB and which appear to be oblivious to the economic consequences on industry.

Over-competitive routes hurt

A basic cause for the industry's recurring financial difficulties and recent low level of earnings remains in the multiplicity of competitive services created in many markets which cannot adequately support a large number of carriers.

The implications are many: Excessive competition creates intensified sales and servicing requirements to say nothing of substantial burdens in financial commitments and the resultant fixed charges of an inflexible character. The airlines are subject to compound leverage. One form of leverage occurs in the nature of operations; i.e., once revenues on a given flight cover operating expenses, the bulk of additional revenues beyond the break-even point has a tendency to flow into profits.

Load factors are thus of vital importance as a key to profitability. Excessive competition thins out load factors among the separate carriers, narrowing cushions above break-even points. And break-even points, in themselves, have had a tendency to rise due to the increased cost of doing business in a highly competitive environment.

Technological advances in the aviation industry have confined break-even load factors for the trunk airlines within narrow limits. For example, the average break-even load factor for the domestic trunk carriers was 57.0% in 1950 declined slightly to 56.6% in 1955 and then rose moderately to 58.3% for 1960. However, actual load factors for this group of carriers which averaged 62.7% in 1950 rose to 64.1% in 1955 and declined to 59.5% for 1960. The spread between break-even and actual load factors determines the degree of industry profit.

An indication of the effects of leverage in airline operations is evident with the realization that an increase of 1% in the load factor could have added almost $30 million to operating revenues of the domestic trunks in 1960.

In the meantime, the competitive pressures—set in motion by overcapacities—continue unabated. TWA filed a tariff with the CAB calling for a coast-to-coast jet round-trip excursion rate of $198 and piston-engine excursion rate of $178, lowest fare offered on this route in recent years. In comparison, the present New York-Los Angeles jet coach fare is $277.20, including the $20 jet surcharge which is not applicable on the new excursion fare. Round-trip fare on piston-engine aircraft, coast-to-coast, is now $218.30.

American and United were forced to file identical excursion fares which will apply to coach travel between noon Mondays and noon Fridays for trips to be completed in not less than 13 days and not more than 30 days.

It is known that both American and United are opposed to any further fare reductions in coach travel at this time in view of its questionable profitability. American, for example, declared the new excursion fares to be "economically unsound," said it would take a traffic increase of more than 40% to replace the revenues lost through diversion and that for every "five passengers diverted there must be two new passengers attracted."

American filed a "Half-Fare Youth Plan" to be effective August 30 for passengers in the 12-21 age group. Tariffs, if approved by the CAB as expected, will be at 50% of regular first class fare under prescribed conditions. This promotion scheme is designed to attract additional business from a new market. American has labeled this plan as experimental and results will determine its continuance. Most of the trunks have joined American in its "Half-Fare Youth Plan."

Hold fares or fail?

The struggle for profit—and even the mere survival of many airlines—would appear to dictate maintenance of recent overall fare levels.

Within the present fare structure there are opportunities for promotional techniques and fares to stimulate and generate additional air traffic. For example, Eastern Air Lines introduced its Air Shuttle service in the Boston-New York and New York-Washington markets with basic new concepts and promotional fares. These markets, because of their high density characteristics (which lend themselves to high frequency service) may prove ideal to convert the auto, bus and rail traveler to air.

However, the main attractions of the Eastern shuttle service may lie in the concept of guaranteeing the traveler a seat and eliminating the frequently tedious procedures attending reservations and related checking-in operations. The fares, some 14.6% lower than the regular coach tariff, may, in themselves, not be the controlling inducements.

In any event, as a history is developed in this operation, it should be demonstrated whether or not new passengers have been converted from surface transportation or if the bulk of traffic is being diverted from other airline schedules.

While, as with all promotional fares, some additional new business may be attracted by these new filings, the diversionary threat is nevertheless real. The drastic shift from first class to coach traffic in the industry's product mix has been previously noted. This is particularly true in the profitable long-haul markets where the total volume has remained the same. For example, on the New York-Los Angeles route, first class volume declined 17.6% during 1960 while coach gained 7%. On the New York-San Francisco run, first class traffic fell 13.4% during 1960 as coach increased by 12.6%.

Coach shift painful

While the general recession may have been a factor in retarding first class volume during 1960, the shift to coach travel is nevertheless real and painful to profit margins.

Gresham's law finds its immediate counterpart in airline traffic as uneconomic rate reductions are instituted.

Mergers are essential to correct industry imbalances and financial squeezes. This objective is zealously endorsed by responsible government and industry authorities. The merger path, however, is beset with complex hurdles. Not only must an essentially "good fit" be present from an economic and operational standpoint, so as to gain required CAB approval, but difficult financial and personality questions require solution as well.

A progressive step in this direction was the consummation of the United-Capital merger, effective June 1. Prior to this there have been about ten airline mergers approved by the CAB during the past ten years.

New proposals will be advanced in due time and some will be consummated. When more mergers are completed, the industry will emerge in a much stronger condition and will be able to generate respectable earning power on a sustained basis. ■

Four ways to tell a true airlifter

1. Loads from the rear

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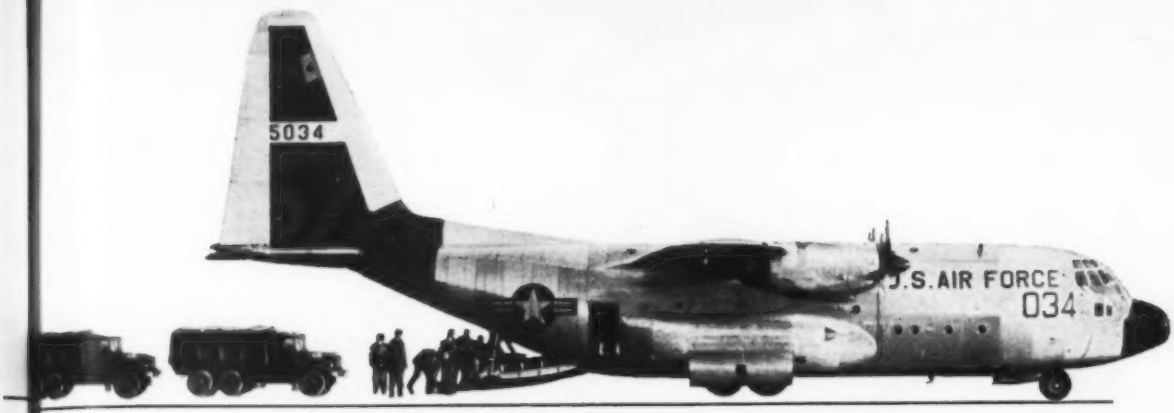
A true airlifter is a special breed of bird—built without compromise for its special kind of work. Huge rear doors allow cargo to be loaded straight in. Cargo floor is truck-bed height; no hoisting cargo up and jockeying it around corners. Rear doors can be opened in flight for bulldozer-size paradrops. And a true airlifter need not be pampered with paving. It lands and takes off in sand and rough dirt, close to the action, just like a bush plane. Lockheed's C-130 Hercules propjet is the true airlifter. Now in its second million miles of operation, 14 different versions are flying or being built for the U.S. Air Force, Navy, Marines, and Coast Guard—and for the air forces of Canada, Australia, and Indonesia. Newest model, C-130E, will soon haul huge cargoes on MATS' worldwide routes. The big Lockheed/Georgia cargo jets of the future will be true airlifters, too; they will have the same four basic attributes Hercules has.



3. Paradrops big equipment

4. Lands on short, rough fields

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U.S. Airline Traffic—January/June 1961 vs. 1960

This complete summary compiled by AIRLIFT Magazine from official CAB data

	1961 to Date				Month of June					
	Rev. Pass. Miles (000)		Rev. Pass. (000)		Rev. Pass. Miles (000)			Rev. Pass. (000)		
	1961	% Change	1961	% Change	1961	1960	% Change	1961	1960	% Change
DOMESTIC										
United (incl. Capital)[2]	3,704,707	16.2	5,739	7.8	739,521	676,796	9.3	1,081	1,067	1.3
American	2,825,347	—7.8	3,639	—11.0	577,103	612,847	5.8	726	785	—7.5
Eastern	2,020,576	—4.0	3,800	—2.5	351,993	244,577	43.9	705	486	45.1
Trans World	1,979,060	—8.7	2,238	—10.2	422,847	443,649	—4.7	450	479	—6.1
Delta	1,106,460	18.7	1,880	12.0	188,147	170,820	10.1	314	312	0.6
Braniff	519,034	—1.9	1,114	—1.2	94,791	103,373	—8.3	194	206	—5.8
National	496,483	—16.4	772	—12.0	95,262	100,260	—5.0	143	160	—10.6
Continental	437,803	2.3	664	2.3	81,799	86,965	—5.9	123	124	—0.8
Northwest	392,153	—44.1	545	—42.4	122,542	137,504	—10.9	167	183	—8.7
Western	340,659	—28.4	576	—32.4	86,200	89,727	—3.9	140	150	—6.7
Northeast[1]	334,575	33.9	691	25.0	N.A.	....	....	N.A.	....	....
Total	14,156,857	—1.9	21,658	—3.8	2,760,205	2,666,518	3.5	4,043	3,952	2.3

[1] Northeast's June statistics not available. Year to date total reflects Jan.-May. [2] United statistics for 1960 include those of Capital for comparative purposes. 1960 Capital figures Jan.-June are 621,187 passenger miles, 1,468 passengers; June: 153,398 passenger miles, 359 passengers.

INTERNATIONAL										
P.A.A. System	2,617,318	12.1	1,537	4.8	582,155	493,087	18.1	338	303	11.6
Latin America	679,653	—5.2	540	—10.1	152,839	131,439	16.3	116	106	9.4
Atlantic	994,065	11.3	736	15.9	245,861	217,559	13.0	168	149	12.8
Pacific	913,949	32.0	234	17.6	175,312	135,050	29.8	47	39	20.5
Alaska	29,651	—5.9	27	—14.8	8,143	9,039	—9.9	7	9	—22.2
Eastern Overseas	389,929	20.6	257	16.3	69,705	55,766	25.0	47	38	23.7
San Juan	305,375	12.3	200	13.0	53,620	48,538	10.5	35	31	12.9
Bermuda	14,454	—6.6	17	—15.0	3,903	3,506	11.3	5	4	25.0
Mexico	70,100	94.2	40	66.7	12,182	3,722	227.3	7	3	133.3
Trans World	382,961	—21.2	128	—22.4	115,842	144,195	—19.7	34	47	—27.7
United	198,236	28.0	79	27.4	53,276	42,252	26.1	21	17	23.5
Northwest	154,350	—8.4	77	—18.1	45,495	34,372	32.4	22	19	15.8
Panagra	104,209	12.3	59	—4.8	18,100	15,437	17.3	10	10	....
Trans Caribbean	86,589	—8.1	57	—6.6	17,703	23,797	—25.6	12	15	—20.0
Braniff	70,333	22.4	46	58.6	13,526	13,382	1.1	9	6	50.0
American	43,959	—29.3	41	—31.7	7,119	8,871	—19.7	7	9	—22.2
Western	29,140	—34.4	19	—36.7	7,913	6,972	13.5	5	5	....
Caribair	15,193	10.3	215	9.1	2,321	2,066	12.3	33	30	10.0
Mackey	11,928	—8.9	70	—2.8	1,727	1,947	11.3	10	10	....
Delta	10,935	—48.9	7	—53.3	2,264	4,514	—49.8	2	3	—33.3
National	918	—92.3	2	—86.6	53	1,929	—97.3	....	2	....
Total	4,115,998	6.1	2,594	1.8	937,199	848,587	—10.4	550	514	7.0
LOCAL SERVICE										
North Central	90,035	10.1	492	5.8	18,053	16,403	10.1	97	92	5.4
Allegheny	80,266	43.5	386	31.3	17,666	13,741	28.6	85	69	23.2
Mohawk	71,161	36.3	348	32.3	14,958	12,165	22.9	70	60	16.7
Pacific	54,179	—3.2	229	—6.1	9,758	10,458	—6.7	41	46	—10.9
Ozark	50,103	5.2	280	3.7	9,364	9,384	—0.2	53	53	....
Piedmont	48,847	5.8	230	8.0	10,364	10,127	2.3	49	42	16.7
Frontier	47,837	13.0	176	9.3	8,766	8,120	7.9	32	30	6.7
West Coast	46,426	1.3	186	—4.1	8,681	8,744	—0.7	35	36	—2.8
Bonanza	38,682	18.2	153	16.8	6,394	5,388	18.7	26	21	23.8
Trans Texas	35,985	—0.2	155	....	6,767	7,176	—5.7	29	31	—6.5
Southern	33,868	42.5	186	40.9	6,461	1,365	374.1	38	8	350.0
Lake Central[1]	22,269	51.1	140	48.9	N.A.	....	N.A.	....	N.A.	....
Central	19,855	25.0	102	24.4	4,245	3,097	37.1	23	16	43.8
Total	639,513	16.1	3,063	13.5	121,487	106,168	14.4	576	504	14.3

[1] Lake Central June statistics not available. Year to date total reflects Jan.-May.

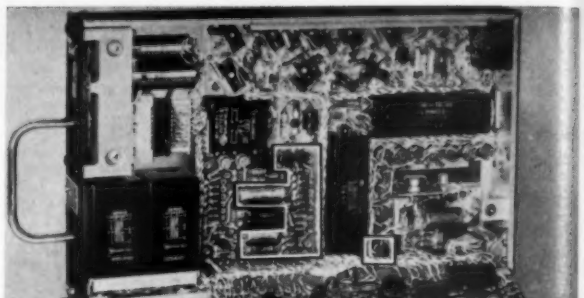
HELICOPTERS										
Chicago	2,139	—18.3	127	—18.1	414	534	—22.5	24	32	—25.0
New York	1,459	2.1	71	....	270	289	—6.6	15	15	....
Los Angeles	791	17.9	22	29.4	162	133	22.6	4	4	....
Total	4,389	7.0	220	—9.5	846	956	—11.5	43	51	—15.7
INTRA HAWAII										
Hawaiian	33,171	—36.2	212	—13.5	6,882	11,125	—38.1	46	48	—4.2
Aloha	23,669	—5.9	161	—2.4	5,024	5,195	—3.3	34	35	—2.9
Total	56,840	—26.3	373	—9.9	11,906	16,320	—27.0	80	83	—3.6
ALASKA										
Pacific Northern	57,136	16.7	60	15.4	15,072	13,884	8.6	15	13	15.4
Alaska	49,717	—4.1	52	—13.3	9,511	9,931	—4.2	10	11	—9.1
Reeve	7,091	—1.3	8	—11.1	1,645	1,381	19.1	2	2	....
Wien	5,020	—3.1	18	....	1,988	1,784	11.4	6	6	....
Northern Consol.	4,506	10.3	14	....	1,443	1,149	25.6	5	4	25.0
Alaska Coastal	2,639	—2.8	26	....	600	704	—14.8	6	7	—14.3
Cordova	1,671	0.2	10	11.1	388	294	32.0	3	2	50.0
Ellis	1,618	—8.0	25	—10.7	398	403	—1.2	6	7	—14.3
Total	129,398	4.8	213	—1.4	31,045	29,530	5.1	53	52	1.9

ALL CARGO	Freight		%	Total Scheduled		%	Total All Services		%
	1961	1960	Change	1961	1960	Change	1961	1960	Change
Aaxico	.....	.....	....	.....	.....	....	.....	6,690,365	....
Aerolineas Sud	166,287	476,608	—65.1	166,287	476,608	—65.1	242,868	508,602	—52.2
Flying Tiger	5,351,433	6,022,472	—11.1	5,403,458	6,112,791	—11.6	10,576,097	7,637,058	38.5
Riddle	NA	.....	....	NA	.....	....	NA	.....	....
Seaboard World	NA	.....	....	NA	.....	....	NA	.....	....
Slick	.....	.....	....	.....	.....	....	2,860,907	7,638,850	—62.5
Total	5,517,720	6,499,080	—15.1	5,569,745	6,589,399	—15.5	13,679,872	22,474,875	—39.1

NA—Carrier delinquent in reports to CAB. % change for year to date reflects comparison with like period in 1960.

Bendix Radio Circuit Checks VOR in Flight

Push-button VOR-CHECK provides airborne clue to VOR accuracy



VOR CHECK COMPONENTS (outlined above) occupy little space in VHF-Nav chassis. Shown above is new model NVA-22A.

by PHIL GERACI

An in-flight checking circuit which not only indicates whether or not a VOR receiver is functioning properly but also discloses the degree of deviation has been developed at Bendix Radio Co. and is being incorporated as standard equipment in new VOR production.

VOR-CHECK is the name Bendix has given to a circuit which requires deceptively few components but which exhibits a high degree of accuracy.

A VOR receiver functions on the principle of phase comparison. A reference signal fixed in phase is compared by the airborne receiver with a variable phase signal which shifts uniformly in phase around a ground transmitter. The degree of phase shift in the variable signal is used to indicate the position of an aircraft with respect to the ground station.

Processes single signal

What VOR-CHECK does is interrupt the 9960 cps reference signal and inject the variable-phase signal into both channels. Since the same signal now is being compared, the result is zero degrees phase difference. The aircraft's radio magnetic indicator needle will swing to zero, if the circuits are functioning properly.

If unwanted phase shift exists within the airborne equipment, the RMI pointer will indicate the degree of error, permitting the pilot to adjust his heading to compensate.

To operate the VOR-CHECK circuit, the pilot presses a button on the CNA-22 control panel. This energizes the VOR-CHECK components, which otherwise remain in a dormant condition. The 9960 cps reference phase signal is grounded and the variable phase signal received from the ground station injected into the reference channel at the output of the 9960 cps detector.

Flag alarm visible

During this operation the flag alarm is visible as an indication to the pilot that his equipment is not processing a normal VOR signal. Disable circuitry, however, is not utilized, in order to keep the indicator operating even though the flag is visible.

The VOR-CHECK circuit is fairly simple. Few components are required (see photo). After injection of the variable phase signal into both channels, the remainder of the checking operation is carried out by the airborne circuits themselves. No external devices are required.

Since a known quantity (a signal without phase shift) entered the equipment when the VOR-CHECK button was pressed, the test can be analyzed on the same instruments used for normal operation. Output is read on the radio magnetic indicator, which should indicate zero degrees, or on the omni-bearing selector, which, if set to zero degrees, will cause the flight path deviation indicator to center.

VOR-CHECK tests the entire navigation circuitry including the differential synchro and the manual circuitry with the exception of the 9960 cps FM circuits. The components which are not included within the circuits checked by VOR-CHECK (because of complexity and other factors) were eliminated only after exhaustive tests by Bendix engineers showed them to exhibit a significantly lower failure rate than the remainder of the equipment.

The need for a system such as VOR-CHECK has been due to operational as well as technical factors. Airline engineers have complained that many boxes pulled after a flight crew reported them to be "malfunctioning" have turned out to be within specifications. The problems often have been due to errors in interpreting or adjusting the instruments in the cockpit.

Aim to reduce cost

VOR-CHECK is designed to fulfill a psychological as well as a technical role, the intended result being lower overall "maintenance" cost. Psychologically, pilots exhibit a fair degree of confidence in a "cockpit check" which can be performed by pushing a button. Since VOR-CHECK keeps tabs on so many aspects of VOR receiver operation, Bendix officials feel it will win wide acceptance by pilots and engineers alike.

In addition to the basic "yes-no" indication on performance, VOR-

PUSH-BUTTON which operates VOR-CHECK circuits is shown at top left corner of CNA-22 control panel. RMI indicates zero as long as button is held down.

CHECK provides a qualitative indication of the degree of error which Bendix engineers say exceeds the accuracy of some standard test procedures. In practice, the amount of error shown by the indicator can be added or subtracted throughout the remainder of a flight, or until repairs can be made.

VOR-CHECK is now in production at Baltimore in new model NVA-22A VHF navigation units. Production on the previous model, the 21 series, has been discontinued, but some stock still is available. For 21 series owners who wish to incorporate VOR-CHECK, Bendix has a modification kit with elaborate step-by-step instructions covering the procedure. ■

AT&T Installs Links For Passenger Phones

Lack of equipment and lack of spectrum space have been serious drawbacks to establishment of a nation-wide public air-ground radiotelephone system for airborne and executive transport passengers.

The first problem is nearing solution as AC Spark Plug Div. of General Motors readies airborne equipment to meet a January, 1962, deadline.

Solving the spectrum deficiency will not be as easy. But mounting demand for additional service which is expected to follow inauguration of a nationwide network may compel FCC action to supply the necessary relief.

AT&T presently is preparing a series of ground stations leading to expansion of the present three-station "golden triangle" network to an east-coast system between Boston and Miami; a transcontinental system extending west from Chicago to San Francisco and Los Angeles; and a west coast system spanning the entire Seattle to San Diego coastline.

The first two ground stations, installed at Chicago and Detroit in 1957, still are functioning. They were joined by three additional stations, at Pittsburgh, Washington, D.C. and Newark, in 1960, to complete the "golden triangle" area.

Ground stations now are being equipped at a number of southern and midwestern cities, including Charlotte, S.C.; Tampa and Miami, Fla.; Denver; San Francisco and Los Angeles. AT&T expects to have the east-coast and transcontinental systems open by the end of 1962. The west-coast network will not become operational until 1963. By the end of three years AT&T expects to have 70 ground stations in operation.

For the past year the system has been operating with five ground stations. But only 15 aircraft have been equipped to use the service. None of them were airline transports. Lack of production equipment has been a hindering factor.

As soon as AC Spark Plug's equipment becomes available, early next year, AT&T will convert the present five ground stations to six-channel operation, matching the six-channel capability of the airborne equipment. If additional frequencies later are made available both airborne and ground electronic equipment will be converted to accommodate the added capacity. ■

Checking the Circuit

• **Sylvania Electric** Products Co., earlier reported to be abandoning tube production entirely *(Checking the Circuit,* Aug., p. 54) disclosed its plan to discontinue tube manufacturing actually would affect only a part of its sprawling tube operation, including the plant at Shawnee, Okla. Still in operation as of Aug. 14 were receiving tube plants at Emporium, Pa.; Brookville, Pa.; Altoona, Pa.; and Burlington, Iowa.

• **Team composed** of Motorola and General Precision engineers, formed more than a year ago but officially "unveiled" only recently *(Electronics,* July, p. 56) disclosed progress on a "complete system" approach to air traffic control utilizing time sharing on discrete frequencies as opposed to the random access and frequency sharing of Martin's RACEP.

• **Abrupt about face** is evident in equipment design for aircraft. When transistors first appeared, aim was to make new designs as small as possible. Result: problems caused by miniaturization have replaced earlier worries over heat, weight and restricted space. Contrary to popular belief, solid state design does not *necessarily* imply miniaturization. Airlines now are asking manufacturers to make boxes bigger, more reliable and easier to maintain.

• **New radar displays** being considered by FAA will permit a controller to wipe out all targets except those at the altitudes he is assigned to control.

• **FAA aim** in air traffic control, according to its most recent expression, is to reduce reliance on human control as much as possible. The big problem is how to do it.

• **Trend toward** increasing use of annunciator panels (*Electronics,* July, p. 47) may be in the offing. Request for additional set of contacts in new equipment was heard at the July meeting of the Airlines Electronic Engineering Committee in Miami. Contacts could be used to supply voltage for external failure-warning devices.

• **Simplified maintenance** procedures may cost the airlines in technical skill. Trend just becoming evident shows skilled electronics maintenance personnel deserting aviation as plug-in modules, easy-to-operate test equipment make reliance on hard-earned technical knowledge less essential.

• **Some airline electronics** engineers insist that a radio altimeter must be a vital part of any future all-weather-landing system. Reliance on "distance-to-go" is dangerous, they feel, since equipment would be required to return an errant aircraft to a pre-determined glide path, and this could necessitate a violent maneuver at low altitudes. With radio altimeter system, aircraft would simply move further ahead in space, permitting another go-around or a landing a bit further down the runway.

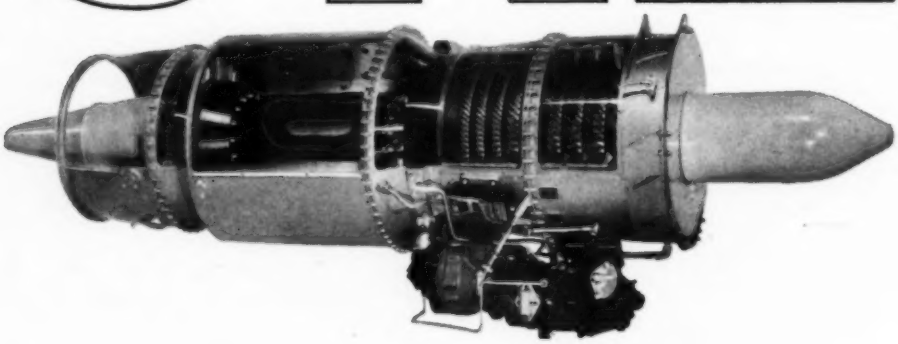
• **Vast expanse** of cockpit in large jet transports is causing problems for Smiths, presently engaged in adapting the Para-Visual Director system to KLM's DC-8. While peripheral vision can be effectively utilized in the relatively limited area of small cockpits (as in the de-Havilland Dove) so much area vies for pilot's attention in larger transports that PVD "barber-poles" may need to be prohibitively large in order to catch the pilot's eye.

• **Some authorities** question the logic of *any* device which produces an instinctive, as opposed to a calculated, reaction in the cockpit. But proponents argue that pulling a stick toward the body in order to rise in the air is hardly an instinctive motion, and devices which are coupled to this motion are no more abnormal than is the art of flying itself, for humans.

• **FAA is reported** to favor a hybrid approach to expansion of frequencies. Such an approach would offer some benefit from technological advances, without obsoleting existing equipment. But relating the lure of exotic new concepts to the hard realities—and economics—of an existing system is no small task.

• **A one-year** "or so" trial period of secondary surveillance radar has begun in the U.K. Technical adjustments reportedly have all been completed, and the equipment now is ready for an operational shakedown. ■

JT12



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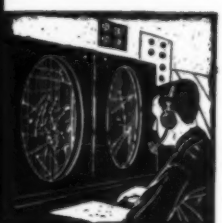

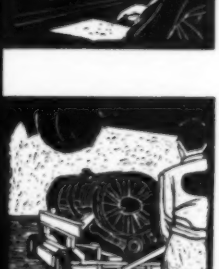

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ATC Bottlenecks Cry for Action

Long range planning is mandatory to cope with anticipated buildup in traffic

By CAPT. E. J. BECHTOLD

The date was Wednesday, April 12, 1961. Riding as passenger in a twin-engine commercial aircraft, I left the gate at Idlewild at 1725E, "on-time," non-stop to Washington.

"Our scheduled flying time," said the stewardess, "will be one hour and forty-one minutes." Two hours and forty-five minutes later, at 2010, we landed at Baltimore. At 2135, four hours and forty-five minutes after leaving Idlewild, I arrived at Washington, by bus, having deplaned at Baltimore. But I was still forty-five minutes ahead of the flight.

System inadequate

Why this happened is "ipso facto," but it is important. Carriers are bending over backwards to keep passengers happy. Much emphasis is placed on customer service." They go overboard to meet scheduled departures and arrivals. That such a delay does occur simply highlights the inadequacy of the ATC system.

In this instance, low ceilings were forecast in the New York area, but weather at departure was no factor. A check revealed deteriorating weather in the Washington area but conditions were 2600 overcast and 4 miles at the time we taxied out.

Before reaching the run-up block we were advised DCA was accepting only five aircraft per hour. When clearance did come through it advised us to expect further delay at Price Intersection. Approaching Price we were advised to hold there with EAC DCA 2200. It was at this point that the flight diverted to BAL.

Holdup at terminal

The bottleneck obviously was the DCA *terminal* area. The answer is perfectly logical, but of little consolation to our passengers. Traffic was converging on DCA from all directions. Though the weather was not bad for flying, it was bad for controlling. This situation came about because:

- All traffic required instrument techniques, including instrument approaches and IFR control procedures.
- As the build-up increased, delays were encountered at DCA because approaches due to wind and weather were being made by way of Georgetown to Runway 15, a somewhat slower pattern than the front course ILS to Runway 36.
- En Route traffic already airborne over New York and other points had to be worked into the rapidly developing complex along with traffic from nearby cities.
- The sheer increase of this traffic build-up created delays for all flights.
- Heavy rain showers interfered with the radar reception, making it impossible to reduce to three-mile separation for short periods of time; thus adding to the delay build-up as ANC separation had to be instituted to provide the proper separation.
- Finally, as usually happens when everything else is going wrong, someone got lost!

System, not personnel

Lest this be misconstrued as an indictment of the DCA control personnel, let's clear the air here and now. This situation resulted because of the system and *not* the personnel. It probably has occurred to you one time or another at New York, Chicago or Los Angeles. Unfortunately, it will happen again.

What can be done? Cleaning up the air traffic snarl, of course, is the primary task of "Project Beacon." The Hough Committee has worked at top speed to meet the deadlines requested by President Kennedy. The committee interviewed user groups, specialists and manufacturers, in cooperation with an aviation consultant group which is helping to assimilate the information.

Without trying to out-think the experts, it is my guess that they will discover that there is no panacea just over the horizon. The cure must be evolutionary, not revolutionary. The chief deterrent to air traffic movement is the airports and their approach aids. We must find ways and methods to utilize what we have more efficiently for the present, but must set the requirements for the long range plan and initiate spade work R&D as quickly as possible.

Changes needed

I specifically recommend:

- More efficient utilization of the airspace, including recapture of more unused "military warning areas;" establishment of jet corridors for commercial and private users; relocation of airways so that "over" traffic will not conflict with landing traffic.
- Adoption of a semi-automated system in which computers apply technical know-how for capacity operation.
- Further consideration of radar hand-offs from center to approach controllers in terminal areas.
- Better methods of transmitting information between pilots and ATC personnel so that practical patterns and procedures are developed.
- A review of controller requirements and workload.

It is necessary to review procedures and position reporting requirements with emphasis on reducing the "cockpit workload" by:

- Reducing the number of required position reports.
- Minimizing necessary conversation between controllers and pilots.
- Reducing the number of frequency changes.
- Providing and assuring early transmittal of proposed changes in procedures, holding fixes and patterns, frequencies, etc. to pilots.
- Giving realistic delay times and clearances.
- Honoring clearances as filed. ■

ABOUT PEOPLE

Turner

Lethbridge

Halliburton

Sharpe

Springer

Winn

CHANGES AT EASTERN

Extensive management changes at Eastern Air Lines include creation of four new positions of executive vice presidents, election of five vice presidents, and the moving of **Robert L. Turner** into the number two position under president **Malcolm MacIntyre.**

Turner, who was v.p.-customer services, is named executive v.p.-transportation services and is elected a director. Reporting to him are **Frank Sharpe,** new v.p.-customer services; **C. Robert Springer,** new v.p.-flight operations; **Ambrose Chabot,** v.p.-aircraft maintenance, and **Don C. McRae,** asst. v.p. and director of communications.

Maurice Lethbridge advances from v.p.-schedules and planning to executive v.p.-staff services, in charge of schedules, routes, market and economic research, aircraft engineering, properties and community relations. Under him are two new vice presidents: **Robert S. Lipp,** v.p.-market and economic research, and **Warren R. Winn Jr.,** v.p.-sched./planning.

Lipp

Jarrard

John H. Halliburton, who has been v.p.-operations, is now executive v.p.-administrative services, based in Miami, handling major operating bases, airports, medical services, security and performance standards. **Joseph H. Brock** is named v.p.-base administration, in direct charge of the four main bases at Miami, Atlanta, New York and Chicago.

The new post of executive v.p.-finance has not been filled. **Thomas E. Creighton,** treasurer, assumes the duties of corporate secretary. **J. O. Jarrard** is the new v.p.-industrial relations.

Under the organization plan, only seven officials report to MacIntyre: the four executive vice presidents; **William L. Morrisette,** v.p.-sales and advertising; **William Van Dusen,** v.p.-public relations, and Jarrard.

IN THE AIRLINES

Japan Air Lines' reorganization places **Ryohei Itow,** who has been managing director-planning and research, in charge of the traffic and sales division, and **Tetsuo Oba** in charge of operations. **Tatsuhiko Kawabuchi** advances from deputy gen. sales mgr. in New York to v.p.-North America, headquartered in San Francisco. **Shigeo Kameda,** Los Angeles sales mgr., becomes gen. sales mgr.-North America, based in San Francisco.

Rafael Igoa resigned as Philippine Air Lines' executive v.p. to join a U.S. shipping company.

Paul Bewshea, 32-year veteran with BOAC and predecessor, named mgr. of

Continued on page 49

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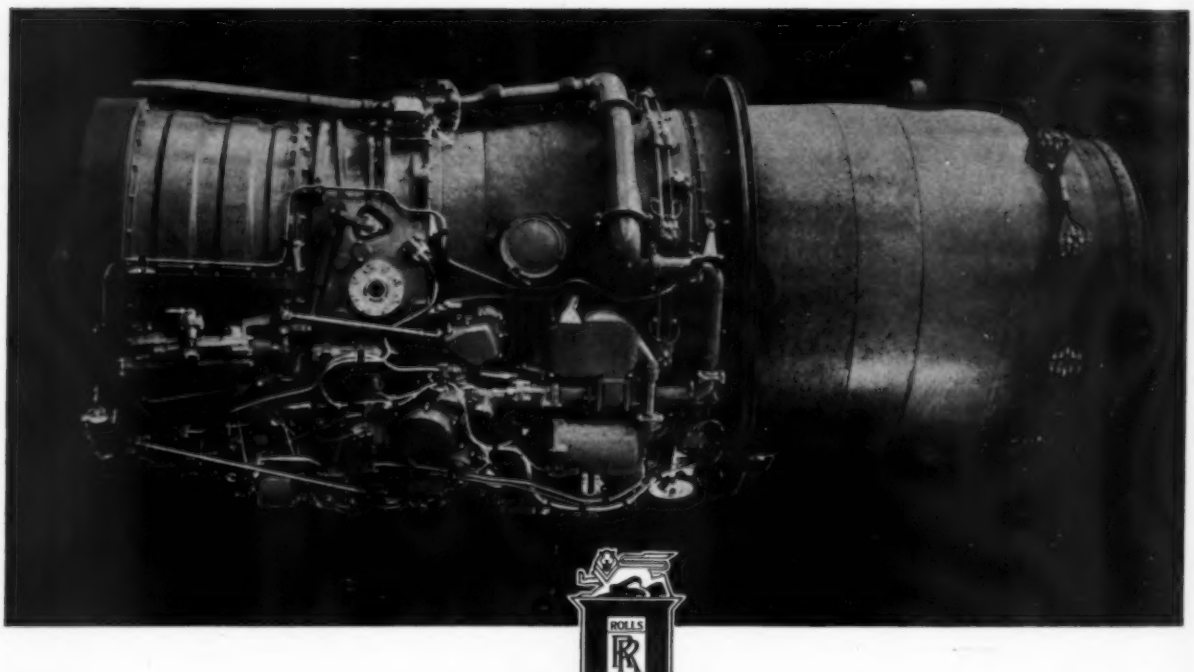

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Continued from page 46

Pacific services, in addition to duties as sales adviser to the U.S. mgr. He is based in New York.

J. E. Jonsson, board chairman of Texas Instruments, elected a director and member of the executive committee of Braniff, subject to CAB approval. Jonsson was one of the four Texas Instruments officials who bought a 34% interest in Braniff.

J. R. (Russ) Cunningham, well known throughout the airline industry, retires after 25 years as director of communications for United.

James J. Lamond, v.p. in charge of the Chicago area for American, named v.p.-flight administration. He will succeed **Capt. William B. Whitacre** as head of the airline's flight department next year when Whitacre retires.

Nelson Lee Smith resigned as v.p.-economic regulation of American. He has established a private consulting practice and will serve as a consultant to AA.

Richard A. Fitzgerald resigned as asst. general counsel of Air Transport Assn. and was elected v.p.-Washington of Seaboard World Airlines.

Richard E. Fisher, who has been v.p.-public relations of Fletcher Richards, Calkins and Holden, New York, named v.p. and public relations director of Northeast.

Andrew J. Phelan promoted from asst. comptroller to v.p. and comptroller of Panagra, succeeding **Ludwig H. Clifton,** resigned.

Robert Forrest resigned as v.p. of Caribbean Atlantic.

H. E. Erdmann, Trans-Texas' v.p.-operations, becomes v.p.-operations planning. **Capt. T. K. Lee** named chief pilot. Other TTA changes: **J. Marvin Brooks** to director of training; **J. L. Herring,** director of properties and facilities; **T. O. Brinkley,** in charge of line communications; **J. A. Martin,** in charge of passenger service; **George Barbier,** mgr. of schedules; **Charles L. Baker,** director of maintenance and engineering; **E. W. Helken,** supt. of electronic maintenance.

L. J. Eichner resigned as Trans-Texas' v.p.-traffic and sales. He did not announce future plans.

Donald S. Scotland named American's mgr. of employe relations, succeeding **Richard G. Wells,** now mgr. of field personnel activities. **Peter A. Franklin** takes Scotland's former post of mgr. of employe selection.

Myra Black retired as TWA's asst. secretary after 30 years with the company.

Howard A. Berrian appointed v.p.-marketing research and sales of Riddle.

Three department directors named vice presidents of Alaska Airlines: **Chester L. Miller,** v.p.-operations; **George R. Sindt,** v.p.-maintenance and engineering; **Raymond J. Wadsworth,** v.p.-sales.

Major realignment at Riddle includes following promotions: **H. K. Howard** to senior v.p. in charge of all operations except scheduled airfreight, which remains under **Charles L. Hood,** v.p.; **D. E. Howard** to v.p.-maintenance and engineering; **H. R. Donalson** to v.p.-military contracts; **J. D. MacDonald** to asst. to senior v.p. Joining the company are **J. V. Hillard,** formerly with Transocean, as v.p.-flight operations, and **R. H. Schwank,** formerly with Capital, as director of purchasing.

AMONG THE SUPPLIERS

Jackson R. McGowen, who has been Douglas Aircraft's v.p.-commercial program, becomes v.p. and gen. mgr. for aircraft based at Long Beach. **Leo J. Devlin,** formerly chief engineer at El Segundo, is

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Slichter

director of aircraft development. **Charles R. Strang** continues as chief of transport aircraft engineering and also becomes deputy director of aircraft development.

Jack S. Parker, formerly v.p.-relations services of General Electric, named v.p. and group executive in charge of the electronic and flight systems group.

J. Lorentz named managing director of de Havilland Aircraft Co. of New Zealand Ltd. **Air Vice Marshal E. W. S. Jacklin** takes over Lorentz's former post as gen. mgr. of Hawker de Havilland (Pty.) Ltd. South Africa.

Richard A. Henson, who has been supervising Fairchild's corporate sales and service program and who also headed flight test, named program director for the F-27 program.

Francis J. Dunleavy, former gen. mgr.-industrial controls, named gen. mgr.-communications and controls division, Radio Corp. of America. The aviation equipment department will be under his direction.

Joseph R. Roberts promoted by Aeroquip Corp. from advertising mgr. to director of advertising. **Victor Kent** promoted from asst. advertising mgr. to advertising mgr.-aircraft and administration.

Donald B. Talmage promoted from director of engineering to v.p.-technical operations of General Aircraft and Leasing division of General Dynamics.

Robert R. Reissig, formerly with Hamilton Standard, named executive engineer of Boeing's Vertol Div.

Emil P. Knapp, formerly chief product engineer for Kollsman Instrument Corp., joins Astek Instrument Corp. as chief engineer.

OTHERS IN AVIATION

August Esenwein, recently retired executive v.p. of Convair division of General Dynamics, elected president of Aerospace Industries Assn. He will succeed **Gen. Orval R. Cook,** who will resign Dec. 31 to go into consulting work. Esenwein will become deputy gen. mgr. on Oct. 1, pending his succession to the presidency.

Jack M. Slichter, who resigned recently as Western's director of passenger service, named acting v.p.-traffic of Air Transport Assn., a post that has been vacant. His appointment will be acted on by ATA's board in the fall.

Fred M. Glass, who heads President Kennedy's Project Horizon aviation goals task force, elected executive v.p. of The Hertz Corp. He has resigned as vice chairman of the board and chief executive officer of the Empire State Building Corp.

C. M. (Casey) Britt, former v.p. of General Aircraft and Leasing division of General Dynamics, heads the Washington office of Aviation Consultants Inc., a firm organized by **Walter Sternberg.**

J. D. Durand resigned as secretary and asst. general counsel of Air Transport Assn. to become executive director of the Committee of American Steamship Lines.

Air Delivery to Europe

Meeting the growing demand of our international readership, AIRLIFT is now being air-shipped to Amsterdam each month for further redistribution to key European cities. The new, fast delivery began with the January issue at no additional cost to European subscribers.

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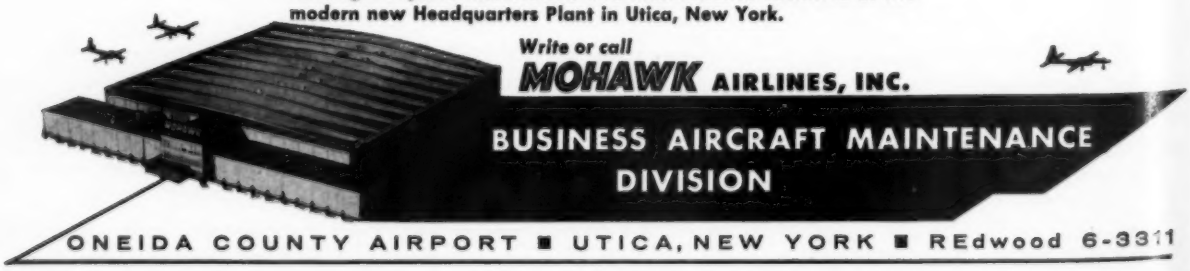

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EAL Takes 'On-Time' Lead; Western No. 1 With Jets

Eastern Air Lines led the U.S. trunk airlines in overall on-time operations during May with an 85.3% record. Braniff and National were runner-ups with 84.1 and 83.1% respectively.

EAL and Braniff also ranked in the first three with jets as Western led in this department at 84.4% on time.

United led Boeing 720 operators with 72.0%. TWA led 880 operators.

ON-TIME BOXSCORE

MAY, 1961

Airline Ranking		Total Trips	On time to 15 min. late
TRUNKS			
1	Eastern	4490	85.3%
2	Braniff	1475	84.1
3	National	438	83.1
4	Western	1085	82.34
5	TWA	2916	82.31
6	United	5132	81.4
7	American	5471	78.9
8	Continental	1472	75.2
9	Capital	2473	74.3
10	Northeast	2437	71.3
11	Delta	1816	68.2
12	Northwest	....	Strike
707 & DC-8			
1	Western	186	84.4%
2	Eastern	445	80.4
3	Braniff	227	79.7
4	TWA	1053	79.1
5	Continental	510	78.0
6	American	1136	72.8
7	National	132	71.2
8	United	1411	68.8
9	Delta	371	57.6
10	Northwest	....	Strike
720			
1	United	761	72.0%
2	American	761	60.7
3	Capital	216	54.1
880			
1	TWA	477	77.3%
2	Delta	468	61.5
3	Northeast	444	49.3
ELECTRA			
1	American	1165	85.6%
2	Braniff	176	80.1
3	Eastern	334	77.2
4	Western	358	60.0
5	National	No nonstop or 1 stop flights	
6	Northwest	....	Strike
LOCAL SERVICE			
1	Piedmont	35*	100.0%
2	West Coast	247	94.7
3	Southern	319	89.3
4	Frontier	259	87.6
5	North Central	1018	86.5
6	Bonanza	449	83.9
7	Pacific	67	83.5
8	Ozark	698	82.9
9	Allegheny	754	79.9
10	Lake Central	427	78.9
11	Central	271	74.5
12	Mohawk	755	70.0
13	Trans-Texas	232	65.5

SOURCE: AIRLIFT Research.

*Only 1 flight not within 5 minutes.

CORRECTION: Listing of Ozark Airlines at 63.9% on time (AIRLIFT, Aug., p. 61) should be 78.7%. Ranking becomes No. 8 instead of No. 12 as shown.

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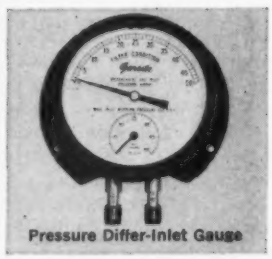
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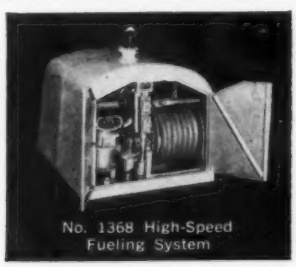
Hydrant Box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LONDON LETTER

By MICHAEL DONNE

White Paper Shifts Airport Financing

The government's recent White Paper setting out the new policy for running the 22 state-owned airports in Britain has a sting in its tail. It makes three main points:

1 A new authority will be set up to own and manage the four main international airports owned by the state—Heathrow, Gatwick and Stansted, near London, and Prestwick in Scotland—and the authority will also plan, build and manage any new airports eventually required.

2 Provincial airports—such as Bournemouth, Cardiff, Belfast, Glasgow, Edinburgh and Aberdeen—all serving large areas of population will be hived off to local authorities and private owners. Talks on this are now about to start.

3 "Social service" aerodromes in remote parts of the country will be run by specially-appointed government agents. These fields are Inverness, Benbecula, Islay, Kirkwall, Machrihanish, Stornoway, Sumburgh, Tiree and Wick, all in Scotland, and St. Just and St. Mary's, both serving Land's End and the Isles of Scilly.

Where's the sting? It is found in a statement in the White Paper that says that "it is right that people traveling by air should pay an increasing part of the cost, and ultimately the whole cost, of the ground services." In other words, the government intends to shift gradually the entire financial burden of running airports from the taxpayer's shoulders to the air transport industry itself.

The government will continue to provide the essential technical services for en route aircraft, such as air navigation and traffic control, telecommunications and meteorology, and it will also provide the technical services at major airfields where these services interact closely on the en route technical services. But while it will provide these services, it will make the users pay for them.

In other words, an aircraft overflying the U.K. on, say, a non-stop flight from New York to Frankfurt, will have to pay a fee for the use it makes of U.K. air traffic control and navigation facilities. How this will be worked out is not yet certain, but there can be no doubt that the government is determined to take money from the air transport industry to pay for the entire cost of ground services.

It will continue to make some aid available to airfields that can't afford the cost of complex technical services, but the tests to be applied before that money is agreed will, in the White Paper's own phrase, be strict.

"It will not be practicable to recover fees sufficient at the outset to meet the full cost of the technical services, but the aim will be to increase the fees progressively until the cost is borne entirely by the civil aviation industry," says the White Paper.

"The government shares the view, expressed before the war, that the full cost of paying for these services should as far as possible be borne by the operators of aircraft without subvention from the taxpayer. This is the only sound basis for the long-term prosperity of air transport."

The long-term prosperity of at least one unit in British air transport does not seem very likely, however, if the recent annual report of British Overseas Airways Corporation is any guide. During the year 1960-61, BOAC made a substantial operating profit on its own account, but this was whittled down to an eventual group deficit after the losses incurred by various of its associated and subsidiary companies were taken into account.

These associated airlines—in such areas as the Middle and Far East and the West Indies—are causing BOAC some concern, and an "exhaustive examination" of them has been carried out. "Vigorous steps" are being taken to remedy their continual losses.

What the steps are, BOAC won't say, but it is believed in British aviation circles that the corporation would not be slow in selling some of these associated airlines, if buyers could be found.

The only difficulty is that some of them, notably in the Middle East, represent instruments of British foreign policy and help to stabilize British influence in the areas in which they operate. The government might not be willing to let BOAC part with them. But, in that case, it is time the government took steps to relieve BOAC of the financial burdens they involve. ■

FOR YOUR BOOKSHELF

An Engineering Approach to Gyroscopic Instruments; Elliott J. Siff and Claude L. Emmerich; Robert Speller & Sons, New York 36; $7.50. This engineering textbook presents the pertinent characteristics of gyroscopes, beginning with easily-understood fundamentals and progressing to new gyroscopic problems. Final chapter is devoted to instruments in use on aircraft, ships and missiles.

Airplane Aerodynamics; Daniel O. Dommasch, Sydney S. Sherby and Thomas F. Connolly; Pitman Publishing Corp., 2 West 45th St., New York; $9.50. Textbook in aeronautical design covers virtually every phase of the art, from the atmosphere, through thermodynamics of air, and on to airfoils, drag, propulsion, devices providing control, and stability.

World Aircraft Illustrated; John W. Underwood; Aero Publishers, Inc., Los Angeles, Calif.; $8.50. Compilation covers aircraft currently in production in major countries of the free world. More than 600 aircraft are described, with 440 illustrations. Names and addresses of manufacturers are given, along with data covering wing span, powerplants, speeds, and other performance details.

Modern Airmanship; Neil D. Van Sickle; D. Van Nostrand Co., Inc., 120 Alexander St., Princeton, N.J.; $9.75. *Modern Airmanship* represents the work of many experts in the field. This second edition incorporates major changes in aviation which have occurred since 1955. Included are expanded chapters on the rise of general aviation; the jet in air transport, hypersonic flight, airways modernization, new navigation aids and reorganization of the FAA.

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FAA REPORT

By BRAD DUNBAR

Anti-Hijacking Legislation Underway by Congress

The dramatic nine-hour siege of the hijacked Continental 707 at El Paso almost certainly guaranteed the Congressional action which alone could plug the airline hijacking and airborne crime loopholes in law enforcement. FAA had just "outlawed" such acts with a special Civil Air Regulation, but could hold out small deterrent—only the $1,000 maximum civil fine allowable under the Federal Aviation Act of 1958.

The special CAR provided (1) "No person shall assault, threaten, intimidate or interfere with a crew member in the performance of his duties aboard an aircraft being operated in air transportation; nor shall any person attempt to or cause the flight crew of such aircraft to divert its flight from its intended course or destination," and (2) aside from those authorized by an airline or government agency, "no person . . . while a passenger . . . shall carry on or about his person a concealed deadly or dangerous weapon."

Legislation asked by Administrator Najeeb Halaby, however, promised to fill gaps in federal statutes with penalties ranging from $1,000 and one year to life imprisonment, and—equally important—create federal jurisdiction that could cope with jet-age speeds and distances.

Other rulemaking in FM's summer regulatory doldrums was limited to a Dulles International Airport rule—first for the big field with its vast runways but uncompleted terminal—establishing unauthorized entry as a misdemeanor punishable with up to $500 and six months, or both. Too many motorists had been "seeing what she'll do" on Dulles runways.

Airport Design Manual

After a 12-year lapse, FAA has updated its manual on "Airport Design" with a 120-page publication now off the press. A most valuable guidebook for airport engineers, consultants and government planners the world over, it is available from the Supt. of Documents, U.S. Government Printing Office, Wash. 25, D.C. at $2.50 per copy.

"Airport Design" devotes detailed attention to many facets of site evaluation, airport layout and construction. Among the more modern aspects of airport design on which it sets down guidelines are:

High-speed turnoffs—Aircraft are divided into three classes: Group I—340, 440, 404, F-27, DC-3 and DC-4; Group II—Electra, Viscount, 1049, 1649, DC-6, DC-7 and LearStar; Group III—707, DC-8, 880 and Caravelle. FAA suggests exit taxiways at 2500, 4000 and 6000 ft. from the threshold to handle each of the three classes of aircraft.

Blast fences—For five-foot to six-foot high fences, the closer the fence is to the outboard engine, the more effect it is in deflecting the blast. A four-foot high blast fence, however, is most effective 100 to 125 feet away, the report says.

VIOLATIONS

•FAA's enforcement division—often accused by pilots of throwing the book at them for a rare and human "honest mistake" at the controls—settled for a mark on the record of a **Delta Air Lines** pilot who brought a 5-inch-thick tree branch into Detroit Metropolitan Airport in the wing of his DC-8 last April 16.

The agency imposed a retroactive 60-day ATR suspension on **Capt. Eugene Fletcher** of Miami, fitting it to the period in which Delta had set him down for the accident. FAA said he hit 48-ft.-high tree branches some 6000 ft. from the approach end of Runway 3L.

•In an airline action, FAA accepted a $6000 compromise penalty from **Seven Seas Airlines,** Burbank, for a lengthy list of bookkeeping, flight duty time, crew qualification and maintenance violations for which the agency originally proposed $14,000 in fines. FAA said the Part 45 carrier has "recognized its deficiencies and taken effective action to correct each of them."

•Another airline fine saw **Wien Alaska** paying a $2000 penalty on charges stemming from the takeoff crash of its Beechcraft AF 11 at Nome last Dec. 18. FAA said it was 709 lbs. overweight, and incorporated a two-place seat that had been installed without required major-alteration approval.

•Other violations as the agency's caseload continued heavy: A $300 fine levied against **Pan American** Pilot **Donald W. Mitchell,** Douglaston, L.I., whose 707 was involved in a near-collision with a British European Airways Viscount after he cancelled his IFR flight plan and went VFR on an approach to Rome Airport August 11, 1960 . . . Revocation of the ATR of **George A. Robertson,** Hialeah, Fla., effective Aug. 25, for operating a C-46 without a commercial operator's certificate on a series of 11 cargo flights between Miami and Panama, the Bahamas and the Virgin Islands . . . A 30-day suspension of the ATR of **Walter H. Nixson Jr.,** Atlanta, retroactive to July 6, for landing at Albany, Ga., last Jan. 25 in weather that was below his DC-3 minimums after application of the required 200-ft., ½-mile "penalty" for his log of only 37 DC-3 hrs. . . . A $300 fine on **United Air Lines** for a maintenance incident last Sept. 7 in which a mechanic's tool box was left in the tail heater compartment of a UAL DC-7 . . . An $800 penalty levied for an incident involving **Capital Airlines** before its merger with United—a cylinder breaking loose on a DC-6B engine during a landing at Chicago because of improper torquing of the cylinder hold-down nuts . . . Revocation on an emergency basis of the Class I medical certificate, pilot certificate and all ratings of **Herbert S. Brannan,** San Bruno, Calif., who failed to satisfy the agency with results of a special psychiatric examination; he had been suspended June 23 pending such an exam . . . A $250 fine levied on **McCauley Industrial Corp.,** Dayton, Ohio, for distribution of "a number" of defective, non heat-treated washers for its 2D36C14 propeller . . . Revocation of the ATR of **Capitol Airways** Pilot **Leo L. Wassenberg,** San Bernardino, who failed two flight checks after a flight involving several violations . . . A $100 fine for **C. E. Mansfield,** Danvers, Mass., for turning the adjustment sleeve the wrong way on three of the hydraulic propeller governors of an Eastern Air Lines Electra which later had to divert from LaGuardia to Idlewild because it could not flight idle the three engines for landing . . . A $100 fine each from **Blatz Airline** Capts. **Tom T. Grider** and **Fred W. Hall** for flight duty time violations in July, 1960 . . . A $150 fine from **Chicago Helicopter Airways** maintenance man **William E. Gatesman,** Berkeley, Ill., for failing to safety the cable turnbuckle on a tail rotor control, and permitting another mechanic under his supervision to improperly wind the cable on the control drum, resulting in reversal of the control . . . A $100 fine from **W. W. Jones,** Dallas, who signed off a **Trans-Texas Airways'** DC-3 after noticing but not correcting a hydraulic fluid leak from the right bungee strut . . . A $200 fine paid by **Jonas Aircraft & Arms Co., Inc.,** for selling a Piper Comanche to a Paraguayan purchaser and failing to remove the U.S. identification markings from it . . . A $75 fine from **Samuel T. Moceri,** Levittown, N.Y., **American Airlines'** mechanic, for improperly installing the cover on an Electra nosewheel well inspection port . . . A $125 fine against **Capt. G. V. Bertoni,** Midwest City, Okla., for an overweight takeoff with a C-46 from Tinker AFB last January 7 . . . A $50 fine for **Stanley K. Stuart,** San Mateo, Calif., for leaving his tool box in the UAL DC-7's tail heater compartment . . . A $25 fine from **Raymond J. Vasquex,** New York, TWA mechanic who left one of the three blades of a Constellation propeller set with five degrees less pitch than the other two. ■

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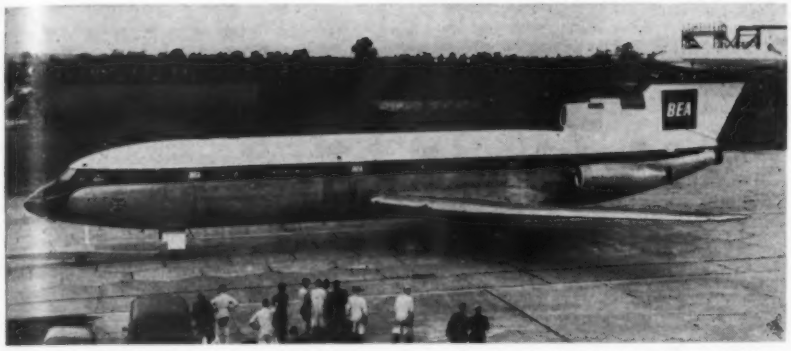


NEXT BIG EVENT on Britain's air transport calendar is first flight of the Trident, deHavilland's three-jet medium range transport. It rolled out at Hatfield plant recently and enters service in 1963.

EQUIPMENT

Brussels—Sabena has ordered two more Boeing 707-320s for delivery next spring. It bought five initially, but lost one in the Brussels accident on Feb. 15.

Rimouski, Quebec—Quebecair has purchased one Canadair 540, its third. It also operates three Fairchild F-27s.

Great Britain—Ten additional AW-650 Argosies being built by Hawker-Siddeley are scheduled for 1963 delivery and will incorporate new failsafe wing design. Company has orders for 66.

Manila—Philippine Air Lines is buying two more Fokker F-27s bringing its fleet to four.

Amsterdam—Fokker has sold two additional F-27s to DTA, Portuguese African airline based in Angola. Fokker has now sold 102 F-27s and Fairchild 86. Dutch firm is turning out five every two months and expects to continue this rate until 1968.

U.S.—Pacific Southwest Airlines, California intrastate operator, bought its fourth Electra and exercised purchase option on other three leased from **Electrahilt, Inc.**

Southern Airways has acquired five Martin 404s from **Hayes Corp.,** Birmingham, Ala. They are ex-Eastern Air Lines aircraft. First 404 service will start in October.

Northwest is adding three **Boeing** 720Bs to its fleet, two under lease and one purchased outright. It ordered six previously.

United Air Lines is buying the last six remaining Viscounts of the 15 returned to **Vickers** by **Capital.** The others went to **Alitalia** (5), **Austrian Airlines** (2), and **Philippine Air Lines** (1). **Northeast** has one on lease.

American Airlines firmed up its initial letter of intent for 25 **Boeing** 727s at $131 million for 1964-65 delivery.

MANAGEMENT

London—After 15 years BEA has ended its holdings in Alitalia but carriers signed a new 5-year commercial agreement for continued joint development of air service between Britain and Italy.

New firms—New England Airlines, Portland, Me. asked CAB for routes in New England area extending into Canada, Pennsylvania and District of Columbia using Convairs, Martins, F-27s or Herons. Bid was signed by exec. v.p. Warren Smith and proposes non-subsidized service.

Air Haiti International is seeking a foreign air carrier permit from CAB for service between Haiti and New York, San Juan and beyond to points in British West Indies. It says it has been designated by Republic of Haiti to operate the service.

Change at Qantas—W. C. Taylor, vice chairman of the board at Qantas Empire Airways has resigned. His successor is R. Law-Smith who joined the airline in 1956. Taylor recently became chairman of Hawker Siddeley (Aust.) Pty. Ltd., a subsidiary of the British aircraft manufacturing group.

Resignation—Jack Howe has resigned as director of pubrel at Trans-Texas Airways. A 16-year veteran with Chicago & Southern and Delta, he joined TTA in 1956 as asst. to the v.p.-traffic and sales.

SALES/SERVICE

Travel manual—Icelandic Airlines has published a new travel manual for interline representatives and travel agents. Eligible parties may request copy from U.S. Sales Manager, Icelandic Airlines, 630 Fifth Ave., New York.

Wheels—Bonanza Air Lines has bought a fleet of seven Comet stationwagons for use by field sales manager.

New services—Paraguayan airline Lloyd Aereo Paraguayo is now operating its first international service with C-46s. It operates one trip weekly to Rio and another to Sao Paulo.

Finnair recently inaugurated a new tourist flight to North Cape, the northernmost tip of Europe well above the Arctic Circle.

ADVERTISING

C. L. "Bill" Smith, brother of president C. R. Smith, has joined American Airlines as director of sales and marketing services.

KLM, a $1.5 million account, has shifted from Erwin Wasey Ruthrauff & Ryan to Ogilvy, Benson & Mather.

Lake Central Airlines has hired itself an ad agency, John W. Shaw Advertising, Chicago.

AIRPORTS

Athens—Hellenikon Airport is undergoing a $10 million improvement including a new terminal billed to be the "best in Europe" and extension of the main runway to 10,600 ft. U.S. is lending $8.2 million toward project.

New York—Two new cargo buildings totaling 125,000 sq. ft. are being built at Idlewild's Air Cargo Center for occupancy by July 1962. Cost is $1,498,600 and new facilities will add 10 aircraft ramps and 40 truck positions.

Reports persist that Pan American's new passenger terminal at Idlewild has already become "too small" and that the carrier is actively seeking a long-term solution.

Ethiopia—Plans have been disclosed for a national airport improvement program including a new airport at Bole (east of Addis Ababa), a jet runway at Asmara international airport plus improvements at Jimma, Dire Dawa and 22 other Ethiopian points.

Los Angeles—United Air Lines is using eight TV monitors with 27-inch screens to display flight arrival and departure information at its new terminal here.

Newark—At long last Newark Airport, one of the "big three" airport holdouts against jets, will accept turbines. New Jersey's governor has authorized daytime flights on an experimental basis starting Sept. 15. American will operate the 720B on one flight, United the Caravelle on three others.

HELICOPTERS

Tokyo—Japan Air Lines is forming a subsidiary firm to operate shuttle helicopter services between airports and downtown heliports over its route network. It will buy either Vertol 107s or Sikorsky S-61s, both of which are licensed for production in Japan. First service is planned for Tokyo operating at 30-minute intervals from 9 a.m. to 6 p.m. Present 30-minute limo trip would be cut to five minutes.

S-62 in Canada—Canada's Dept. of Transport has taken delivery of a Sikorsky S-62. It will be maintained at Vancouver International Airport and used for supplying and servicing lighthouses on Canada's west coast.

CARGO

New approach—A radically new air-freight tariff, intended for introduction with the Canadair CL-44 swingtail turboprop freighter about Nov. 1, is proposed by The Flying Tiger Line.

In a number of areas, planned rates are below the minimums established by CAB. The tariff, not yet filed, must be held until these orders are rescinded or amended.

The on-line rates are aimed at producing a minimum average return of 13.5¢ a

ton-mile, sufficient to recover the $3.07 per mile total operating cost when the CL-44 operates at 70% load factor.

Biggest change is replacement of general commodity rates with class rates based on density. However, FTL will retain a large group of specific commodity rates covering products now shipped. Rates for shipments under 100 lbs. are based on present revenue return per ton-mile of 26.9¢.

The Hague—KLM has unveiled a new lure to shipment by air—time arrival guarantee—in which shippers can guarantee arrival within 24 hrs. of schedule or get their money (total shipping charge) back. Fee for TAG insurance is 1% of transportation charge or minimum of $1.

At start, TAG becomes available only for eastbound freight from U.S. to 19 countries in Western Europe, but carrier expects to extend it to westbound traffic and other continents soon. Transportation charges are insured up to $25,000 per single aircraft under the plan.

Frankfurt—Lufthansa has selected this city for the location of a super-regional air cargo center which will handle all cargo and mail bookings for its entire route network and interline bookings.

London—BOAC has retained Heinrich Aviation Consultants Ltd., Montreal, to study the future of air cargo as it affects BOAC. Heinz J. Heinrich is Trans-Canada's former supervisor of planning.

ENGINEERING

Snow removal—Aircraft ramp areas at TWA's Idlewild terminal now under construction will incorporate eight heated pits measuring 12 by 1.5 by 6 ft. into which plows will push snow. Portable heat generators will melt 25 tons of snow per hour and six inch pipes will drain the pits. Esso Research and Engineering Co. developed the system being marketed by Thermal Research and Engineering Corp., Conshohocken, Pa.

Headaches in hydraulics—Society of Automotive Engineers has formed a special study group within its Aircraft Hydraulics Subcommittee A-6 to direct its attention to all problems being experienced with commercial jet hydraulics systems.

No windshield wipers—United Air Lines will adopt the DC-8 hot air blast system for windshield rain and sleet removal on its Boeing 720s and future 727s. It uses engine bleed air at 400°F to do the job.

Flat wheels—It used to be that occasionaly a tire blowout or flat would result in wheel damage. Recently at Atlanta, an 880 taxied up with a flat tire and the cause was traced to a "punctured wheel." (This day of tubeless tires is turning things all around, if they aren't flat, that is.)

MAINTENANCE/STORES

Service standard—Hawker Siddeley Aviation has adopted a single standard of after-sales service for its member companies—Armstrong Whitworth, de Havilland and A. V. Roe. In addition to deH Comets and AW 650 Argosies already in service, de Havilland will be introducing the Trident and A. V. Roe the Avro 748 in the period ahead.

The standard service includes a 24-hour AOG (aircraft on ground) spares service throughout the world. It also offers spares service based on the ATA Spec 200 IDP system and all customers will receive provisioning cards for data processing if they so elect.

AUTOMATION IN CARGO takes over at Pan American as the first of its modified DC-7CFs with the AirPak pallet and roller system is completed. Pan Am expects system to cut unloading and reloading time to one hour. It now takes about four hours. System is a joint Pan Am-Douglas development and employs seven 108 by 88 in. pallets each capable of handling 6700 lbs. All 13 of Pan American's DC-7CFs will be fitted with AirPak.

ELECTRONICS

RCA sales of AVQ-60 ATC transponders are "just getting in gear" with sales of more than 100 copies to variety of airline and corporate users. Units are being sold with or without altitude reporting circuit board, at customer option.

Collins Radio Co. reported receipt of $259,000 DME order from **Northwest** for DC-8, 720B and Electra installations. Collins also reported $100,000 order from **Southern Airways** for VHF transceivers, radar and related equipment.

Raytheon moved to capture at least two percent of the industrial electronic sales in the U.K. with a bid to buy **A. C. Cossor, Ltd.** for approximately $6 million.

Weather up to 250 miles away from New York City soon will be shown on television monitors at Weather Bureau offices (30 Rockefeller Plaza) and at airport weather stations. **Intercontinental Electronics Corp.** monitors purchased by Dept. of Commerce will feature television-type bright displays.

Dalto Electronics Corp. has been awarded $1 million Navy contract to design and build all-electronic visual flight simulator attachments. Dalto device will utilize fresnel optical landing system to direct approaches under extreme low visibility.

REAL Airlines has ordered **Canadian Marconi** CMA-623 doppler radar navigation equipment for Convair 990 jet transports scheduled to begin service soon.

MISCELLANY

Charters—KLM recently flew seven tons of ABC-TV equipment from New York to Moscow for coverage of the U.S.-Russia track meet. The TV team brought along its own electrical power, a 25,000 watt diesel generator.

Facilities—American Airlines' recent move from 100 Park Ave. to 633 Third Ave., New York, consolidates 1650 employes at one location. Its floor space has increased from 115,000 to 215,000 sq ft.

Hijinks—Best of the airline hijacking cartoons was the New Yorker's sketch of passengers in cabin with caption "Good morning ladeez and gentlemen, this is your new pilot Pedro Gonzalez!"

Lost baggage—Airlines and airport authorities at Los Angeles hired a "private eye" several months ago and quickly tracked down a band of amateur thieves who were self-claiming an unusually high amount of passenger baggage and taking it to a nearby apartment for disposal.

Art—Swissair employs a full-time art director in the U.S., O. H. Bucher, a 26-year old Swiss, to work with its North American ad manager W. J. Van Bushkirk . . . Iberia, Spanish airline, has named its first three DC-8s after artists—Velazquez, El Greco and Goya.

Hotels—New $10 million, 1000-room hotel is being built in Frankfurt by Pan Am subsidiary IHC and Frankfurt Hotels GMBH for mid-1963 occupancy.

Almost plagiary—MATS Dover AFB has renamed its newspaper the *Air Lifter*. It used to be called *Transport*.

Triangle—Charles Butler, New York, will design a ticket office for Canadian Pacific Airlines, Vancouver, for (of all places) Hong Kong. Butler recently developed a new corporate image for CPAL.

Club room—We've never heard or described quite this way, but KLM has opened a 3195-sq. ft. cocktail lounge called "The Flying Dutchman" on the third floor of Idlewild's International Arrivals Building.

IDC Calibrator Checks Air Data Instruments

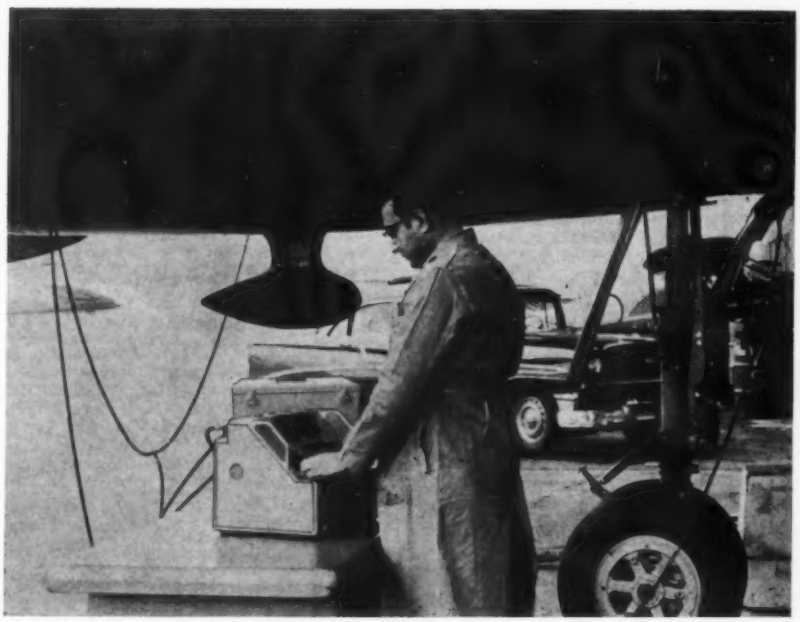
A portable air data calibrator manufactured by Intercontinental Dynamics Corp. is being used as a secondary standard by Pan American World Airways to service a wide range of air data instruments on turbine transports.

The unit is IDC's VPT-10C, designed for line calibration of pitot static systems, altimeters, airspeed indicators, air data computers, cabin pressurization control systems, machmeters, flight recorder sensors, autopilot air data sensors and oxygen mask control equipment.

Pan Am maintenance manager R. M. Adams feels the VPT-10C cannot be measured against any other similar item with regard to time saving. He says that it is difficult to compare the VPT-10C with any other piece of equipment, because prior to its arrival Pan Am did not have equipment which would do the same job. Previously available equipment did not have the required safety features or the range necessary for the altitude/airspeed combination to be tested.

The air data calibrator tester is a small (18 x 19¼ x 14¾ in.), portable (wt.: 65-72 lbs.), unit which contains a motor-driven vacuum and pressure pump, electro-mechanical servo regulators, precision readout instruments, and connections for external attachment to an aircraft's pitot static system, or other system to be checked.

IDC air data calibrator contains precision readout dials for instruments under test.



PORTABLE AIR DATA calibrator manufactured by Intercontinental Dynamics Corp. is used by Pan American for flight line testing of wide range of instruments.

It is designed to be used for field testing, troubleshooting, and calibrating various air data aircraft instruments, computers and pitot static systems on turbine or piston aircraft.

The unit is attached to the aircraft under test by a "leach." No lines in the aircraft are disconnected. Only two controls—one for pitot and one for static—need be manually operated. The test procedure takes an average of 30 minutes for a Boeing 707.

The unit can test altitude over a range of minus 1000 ft. to plus 50,000 ft. The airspeed range is 50 to 650 knots. Altitude is readable to five ft., and airspeed to ¼ kt. Accuracy is reported to be better than .003" Hg. in both airspeed and altitude.

Pan American has found the VPT-10C sensitive to the point that it is capable of detecting a fault in a deteriorating system which was not apparent on a previous flight. The airline reports reliability has been good.

In addition to Pan Am, a number of other airlines are included on IDC's customer list. They include Air India, Braniff, Delta, Eastern, Northeast, Northwest, South African Airways and TCA, plus a variety of corporate and military users.

NEW PRODUCTS

Cargomaster

A new type of cargo conveyor vehicle in use at London Airport carries 4½ tons of luggage and can accommodate a variety of aircraft loading heights. Built by Douglas Equipment Ltd., the Cargomaster employs scissor type elevating gear which can raise the body over a range of from 3 ft. 8 in. to 12 ft. from the ground.

A low-slung driver's cab (4 ft. 2 in. high) permits the vehicle to move in close to an aircraft without risk of striking the underside of the fuselage. The vehicle is being used to service 707s operated by BOAC.

Glideslope Receiver

A 10-channel glideslope receiver weighing one-half lb. is provided as an integral part of the King KX-100 COM/NAV/ILS unit. The new unit is designated KX-110. It contains a 90-channel crystal controlled transceiver (118-126.9 mc) with 10-watt transmitter power and receiver sensitivity to match, plus a separately-tuned crystal-controlled NAV receiver, covering all

omni and localizer channels, and the new glideslope receiver.

The glideslope receiver has each glideslope frequency paired with its corresponding localizer frequency. Tuning the localizer automatically tunes the glideslope.

The unit weighs 9 lbs. including transistorized power supply. Space requirements are 6½ in. by 5¼ in. by 8 in. It is available for 14 or 28 v. Price, including 14 v. power supply: $1495.

Microphone

Raytheon "Elucidator" mike.

A press-to-talk microphone for airborne communications has been introduced by Raytheon Co.'s Distributor Products Div. The "Elucidator" is molded of high-impact plastic, and is contoured to fit the hand. A retractable, 11-to-60-in. coiled cord is provided.

Frequencies below 200 cps and above 4000 cps are attenuated for increased intelligibility within the voice range. With a nominal impedance of 35 ohms the semi-directional unit operates on DC microphone currents ranging from 15 to 20 ma.

The unit is designed to be directly interchangeable with microphones used in airborne, citizens, amateur and intercom equipment. Price is $19.95.

Dual Altimeter

A precision altitude servo indicator which can function from two separate sources of altitude information has been designed by Astek Instrument Corp. for use in jet transports and other aircraft which require precise pressure altitude information.

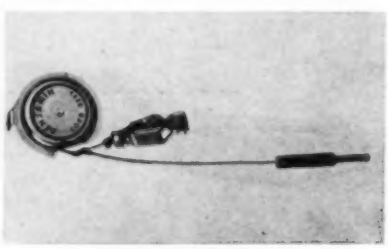
Called a Dualtimeter, the unit has a range of from 1000 to 50,000 ft. Barometric setting range is 28.1 to 31.0 in. Hg., or 946 to 1043 mbs.

The Dualtimeter normally presents altitude information from static pressure on a pair of evacuated diaphragm capsules. But it also can accept altitude information in synchro output form from a separate source and display it in lieu of that from the diaphragm mechanism.

Such data may be derived from an air data computer, radar altimeter, sonic altimeter or other device.

Grounding Reel

A grounding reel for grounding aircraft fuel servicing coupling nozzles is offered by Benjamin Reel Products, Inc. It is equipped with a 50-ampere Mueller Clip on one end and a Nato plug on the other end of the "Y." List price of the unit is $6.75.



Fuel nozzle grounding reel.

Snow Removal

Page-Littleford "Ice-Jet" snow removal equipment offers an unusual adaptation of aircraft equipment to airport needs. The "Ice-Jet" incorporates a J-47 jet engine so arranged on a cart driven ahead of a truck that it can be used to blow away snow and ice from airport ramps and runways.

The exhaust nozzle is adjustable vertically as well as horizontally. Exhaust temperatures as high as 1275 deg. F melt ice and dissipate it along the sides of the runway. The "Ice-Jet" produces only an 18-in. bank of snow at the edge of the runway, "feathering" the snow to a maximum height of 30 in. approximately 15 ft. from the runway.

Jet snow remover.

Hi-Lift Truck

A Hi-Lift Hydraulic Hoist is used in a food-service vehicle built by Dan Mitchell & Sons, Inc. and operated at Philadelphia International Airport. The hydraulic hoist and gate were built by the Perfection Steel Body Co.

Entrance to the body of the van is made directly from the cab when the van is lowered. The body can be raised to any desired height by push-button controls located in both cab and van body. The hoist is designed to keep the van body level throughout its entire range of movement.

Food service lift truck.

INFO FOR THE ASKING

Digital recorder—Six-page flyer describes IDR 6150, a new Honeywell incremental digital recorder which has applications in computer programming, geology and numerous other fields.

ADVISOR—Reprint from Western Electronic News describes Convair's Advanced Integrated Safety and Optimizing Computer—a takeoff monitor developed by Convair and John Oster Mfg. Co. engineers.

Cooling unit—Bulletin from AiResearch Manufacturing Div. describes a cooling unit for airborne fire control system. AiResearch also offers brochure on an electric-motor driven freon compressor.

Electronic instruments—Bulletin from John Oster Mfg. Co. lists several new instruments developed for jet aircraft: multi-engine cruise computer and jet engine condition computer.

VHF transceiver—Bulletin No. 612 describes new Narco 50kc communications equipment. Models described are Mark 7 and Mark 10.

Pictorial display—Bulletins from ACF Industries describe navigation pictorial displays and ACF activities in development of navigation and situation displays.

ADF—Brochure covering Aircraft Radio Corp.'s model 21A automatic direction finder is available from Dept. A-7-8.

AM transmitter—Motorola Semiconductor Products offers printed report on 120mc aircraft AM transmitter using 2N1692 and 2N700 mesa transistors.

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EN ROUTE

By WAYNE W. PARRISH

Left Side Driving in Capetown . . . And All About Ostriches

On that sunny Sunday when Hassel, the Danish driver for African Car Hire, drove my wife and me all around the Capetown area and out on the peninsula to the Cape of Good Hope, the winds were of gale force.

High winds are not uncommon at the tip of the African continent. On this day they were so strong that the cable car to the top of Table Mounain, which dominates Capetown, couldn't operate. I have never seen such a heavy and awesomely beautiful surf as it pounded the lava rocks in front of the Queens Hotel at Sea Point. But the gales—which blew two automobiles off the highways that day—could not diminish the scenic beauty of the Cape area.

On Monday morning came the real test of my resolution to learn to drive on the left side of the road. (Like Great Britain and Sweden, the Union of South Africa follows the left side custom.) My only possible route to the coastal highway east from Capetown was to drive right through the center of the city. I ordered my rental car, a very good Austin 55, to be delivered at 7 a.m. With considerable doubt as to my ability to avoid smashing head-on into opposing traffic, I started out.

Better learn in traffic

It was a rough beginning, but chiefly psychological. I had doubted all the advice that driving on the left comes easily after the first few minutes. But the advice turned out to be correct. I confess I was terror-stricken that I'd make a wrong move, for after all, the habit of driving to the right for over forty years didn't seem easy to overcome. But let me give you a tip: you can switch over quite easily.

Matter of fact, if you get to a country which drives to the left, try it out *in* traffic. Then you just follow the stream of traffic and do as others do. The only time I forgot to keep left was on empty roads. After my first twenty miles I felt quite at ease.

I can testify, however, that Capetown is one of the worst marked cities in the universe. Correction. It is *the* worst. My city map helped but little. No highways are marked with route numbers either in or out of cities. Come to a circle and there isn't the slightest indication of street or road names, so the map is useless. Before I got out of the sprawling city, I was hopelessly lost and managed to find my way to the main east road only by hit and miss and by using Table Mountain as my direction-finder. Imagine a national highway network without a numbering system. South Africa makes it tough on the drive-yourself visitors.

About fifty miles east of Capetown the highway climbs over Sir Lowry Pass with some good scenic views. Then comes an area of wheat farming that looks for all the world like Montana. It is fine agricultural country but not scenic. The road is excellent with the traffic light and the towns and villages far apart. Eating facilities and even gas stops are not frequent. You have to plan ahead for meals and hotels.

Mrs. WWP with a fresh ostrich egg.

But the Dutch names of villages and towns were interesting: Grabouw, Zonder End, Swellendam, Hartenbosch, Bredasdorp. And our goal for the first night was Oudtshoorn, forty miles inland over mountain passes in a sage brush area that resembled Wyoming.

So why Oudtshoorn? Well, it happens that this is the only ostrich farming center in the world. I guess I needed to know about ostriches like I need to go sky diving, but it was curiosity that took me there and it was a fascination of those strange birds that kept me there many hours beyond my original plans. If you ever get to that part of the world, visit Highgate Ostrich Farm, by far the best of the ostrich farms in that region, and you'll have yourself a ball.

The ostrich is a crazy bird that doesn't exactly conjure up love and kindness, but he is certainly unusual. It isn't true, incidentally, that an ostrich buries his head in the sand to avoid detection, but he does lower his head.

Fullgrown birds can be vicious. They have a very powerful kick, striking with fast downward strokes, and the single big toenail can slash a human to pieces. But you can keep an ostrich from kicking by holding his head in the fork of a strong tree branch.

Photos by WWP.

A tough old bird with feathers ruffled, ready for a fight.

Now don't give up on me. I'm a goldmine of information about the ostrich and you ought to know all about it. For example, there are 40,000 ostriches on the 200 farms around Oudtshoorn and it's been a very up-and-down business. Ostrich farming began there back in 1859 and by 1882 there were 100,000 birds producing those fine feathers and plumes for dusters and for high society dames. Then the market took a real bust and a lot of farmers lost their shirts and feathers. It wasn't until 1905 that business got better. An all-time peak was reached in 1913 when there were 750,000 birds working like the devil to produce feathers.

The combination of the automobile (what woman could wear ostrich plumes driving in those early cars?) and World War I broke the market again and it's been down ever since. Today it is well regulated by a cooperative and business is fair. Society dames don't use plumes any more and the fan dancer market isn't too lush. But some folk like real dusters.

Ostriches aren't new. They have always grown wild throughout Africa and fancy plumes were known even in ancient Egypt.

But what a cockeyed bird it is. It thrives on lucern, which is called alfalfa in the U.S., but it has to have a bunch of marble-sized stones in its gizzard in order to digest the hay. If there aren't any stones available an ostrich will pick up any hard objects such as bones, even wire and tin. They drink water but can exist for a long time without it.

Eggs every other day

Now hang on. Forget Berlin, Viet Nam and outer space. You need to bone up on ostriches. Now where were we? Oh yes, the ostrich has a natural life of about forty years but for feather production he is rarely kept beyond fifteen. The female lays one egg every two days and when she has 10 or 15, the hatching season (six weeks' incubation) starts. The female sits on the eggs during the day and the male sits at night.

The ostrich egg is not only huge but is so hard a human can stand on it without breaking it.

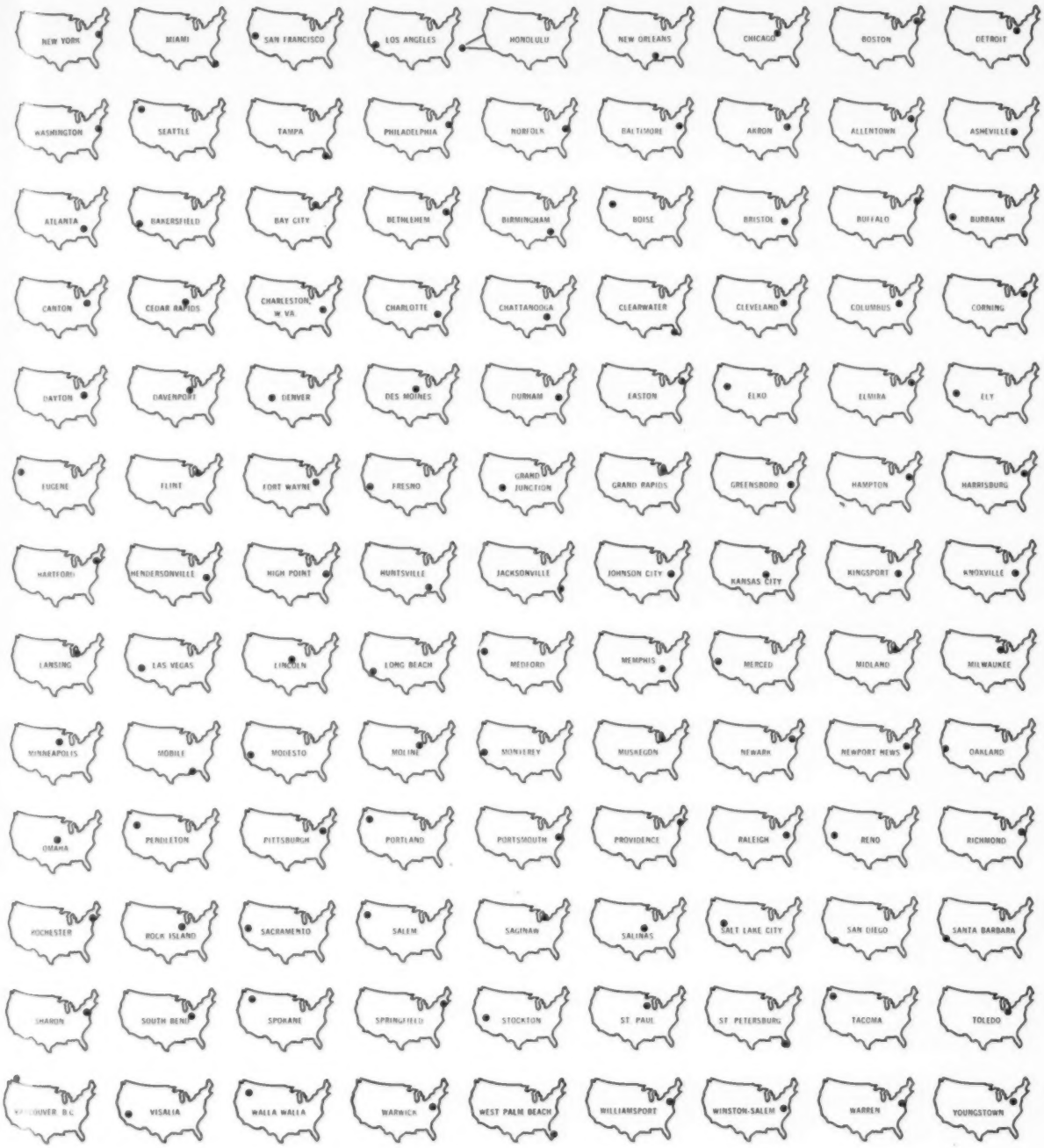
Ever heard of bildong? This is dried ostrich meat and is sold in small packets and is highly prized as a delicacy. School kids chew it instead of chewing gum. The meat is tough, stringy and salty, but not too bad. I boldly ventured to experiment by bringing a few small packets back to the U.S. and sent them out as presents. The victims survived.

Ostrich skins are manufactured into ladies' handbags, shoes, purses and wallets.

For plucking, ostriches are driven into a small enclosure or "kraal." Individual birds are caught by means of a hooked stick, led to a triangular box and masked with a sock. Best quality feathers are clipped every nine months, each bird producing about two pounds per plucking. About 55,000 lbs. of feathers are shipped annually, 40% to the U.S. and Great Britain.

At Highgate Ostrich Farm the help show you how to ride these big birds. The practice is not recommended for amateurs but is a lot of fun to watch.

So what else do you want to know about ostriches? Where else but on this page can you find such truly educational and informative material? I drove 300 blessed miles to get to Oudtshoorn to research this vital news, so don't tell me I wasted my time! ■



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Fifth engine tests Boeing 727 design feature

The Boeing 707 prototype, which proved out advanced design features of the Boeing 707 and 720 jetliners, is now at work as a flying test bed for the next generation of Boeing jets—the three-engine short-range 727.

The prototype is shown above equipped with a fifth engine, conducting exhaustive tests of the efficiency and performance of side-mounted engines, a feature of the 727. In addition, the 707 prototype is testing new high-lift wing flaps, aircraft systems and other design features that will make the 727 the most advanced jetliner of its class.

Already, one hundred seventeen 727s have been ordered by American Airlines, Eastern Air Lines, Lufthansa German Airlines and United Air Lines. Deliveries begin in 1963. The 727 will operate from 5,000-foot runways with full payload, serving routes from 150 to 1700 miles. It offers airlines many advantages, including components and systems that have demonstrated outstanding performance and reliability in over 300,000,000 miles of Boeing jetliner operations.

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